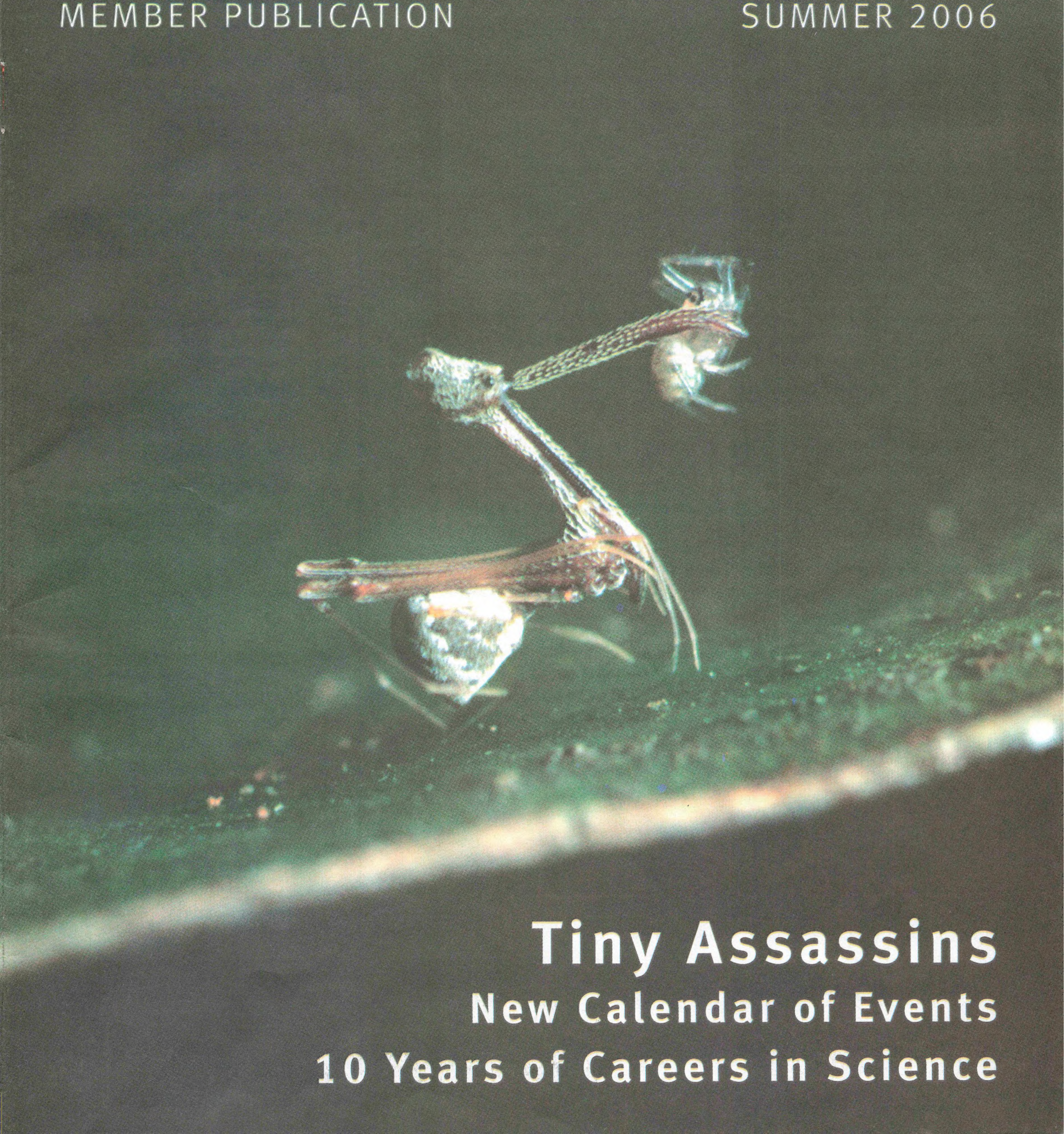
CALIFORNIA
ACADEMY OF SCIENCES

MEMBER PUBLICATION SUMMER 2006



Tiny Assassins

New Calendar of Events

10 Years of Careers in Science

Welcome to the first issue of the Academy's new Member Publication. Inside, you will find some of your favorite features from the Academy's magazine, *California Wild*, such as Bing Quock's popular Sky Guide and stories about current Academy research. You will also find an expanded calendar section to help you make the most of your Academy visits, as well as information about special programs and lectures. As always, if you would like to hear from us more frequently, you can sign up to receive our monthly electronic newsletter, *Academy eNews*, by sending an email to info@calacademy.org.

Summer is finally creeping into the Bay Area, bringing growth spurts to a number of the region's native species. Academy scientists like Tom Daniel are taking advantage of this opportunity to document the diversity of the season (read about his research on pages 16-17). Meanwhile, the Academy is experiencing a growth spurt of its own. In Golden Gate Park, the museum's new building is rapidly rising. The African Hall structure is now nearly complete, and the new penguin tank at the end of the hall has been installed and tested. The basement rooms that will hold many of the Academy's 18 million scientific specimens are also complete, and a number of the offices and labs are well underway.

The Academy's collection of live animals is also growing. In April, two of Steinhart Aquarium's African penguins became proud parents when a new penguin chick hatched. The chick, which will be on public display beginning in July, was bred through the Species Survival Plan and will help ensure the safety of the species. Additionally, about a thousand new colonies of coral are currently growing in 46 special "Coral Rearing Pods," which have been installed on the second floor and in the basement. This coral will eventually fill the Academy's new Philippine Coral Reef display that is under construction in the park. Visitors to 875 Howard Street can get a glimpse of these glowing pods in the room that once held the Naturalist Center.

If you haven't had a chance to learn about the amazing diversity that exists within California by visiting the Academy's *HOTSPOT* exhibit, you still have a few months to do so—the exhibit will be open through August 6. Coming up next, *DINOSAURS: Ancient Fossils, New Discoveries* will thunder in to the Academy on September 16. We hope to see you often over the coming months.

- Patrick Kociolek, Executive Director

MEMBER PUBLICATON

Summer 2006, Issue No. 1

3 **Academy Research**
Tiny Assassins *Academy scientists recently discovered nine new species of assassin spiders, which survive by preying on other spiders.*

5 **Programs**

6 **Highlights**

8 **Calendar of Events**

14 **Sky Guide**

15 **Aquarium News**
Cultivating Corals
Steinhart's Rockfishes

16 **Academy Research**
Plant Preservation *To help save San Francisco's native plants, Academy botanist Tom Daniel is making a list and checking it twice.*

18 **Education**
Careers in Science *An innovative Academy program celebrates its ten-year anniversary.*

20 **Lectures**

21 **Travel Program**

22 **Development**

24 **New Academy Update**

Pat Kilduff	*Director of Marketing & Communications*
Stephanie Stone	*Editor*
Andrew Ng	*Editorial Assistant*
Charmagne Leung	*Art Director & Production*

Contributors

Jeremy Miller *Cover Photo*

Katie Berryhill, Tom Daniel, Samantha Jang, Bing F. Quock, Carol Tang, Peter Tucker, Tom Tucker, Kevin Welch

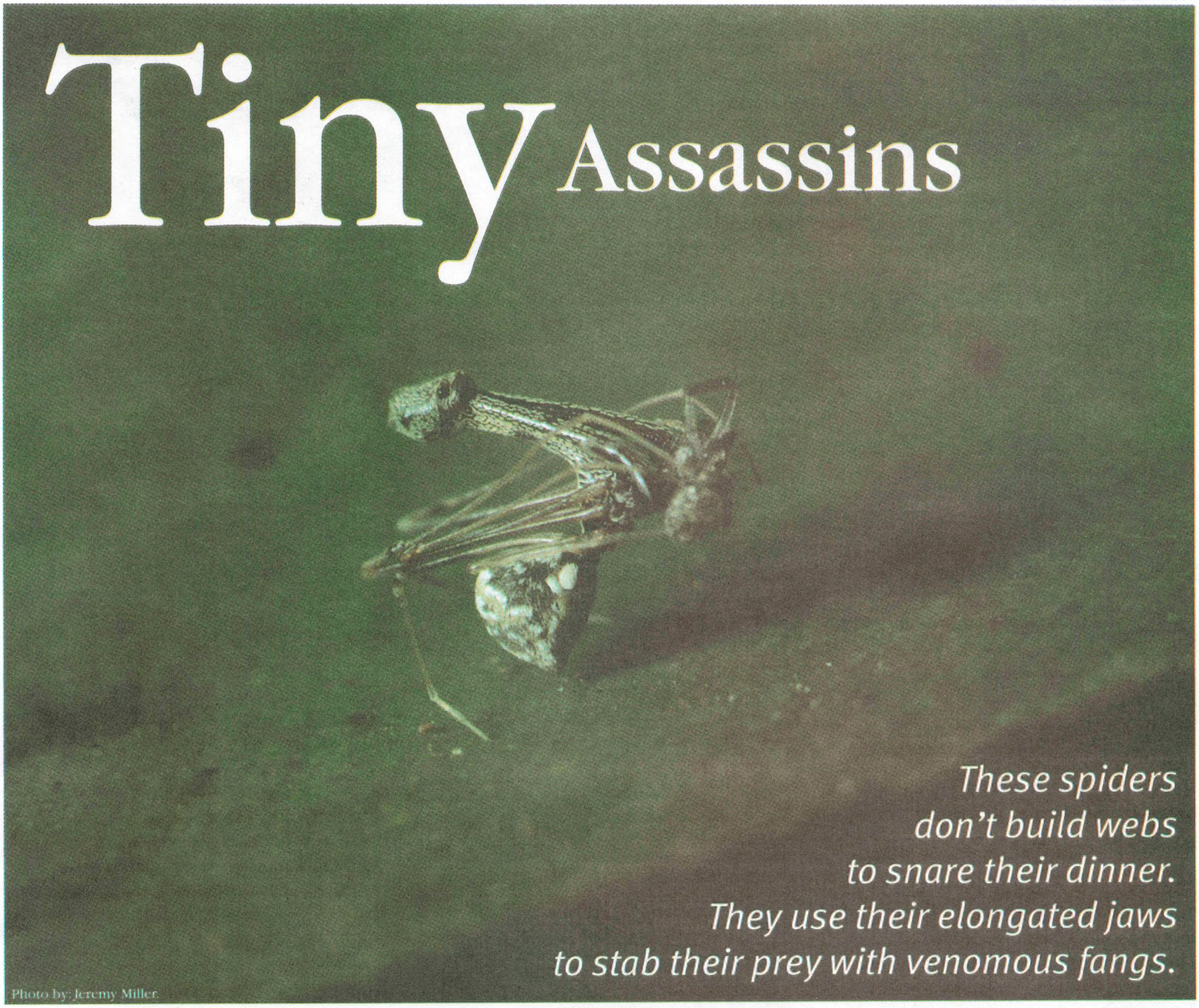
California Academy of Sciences Member Publication (ISSN 0000-0000) is published quarterly by the California Academy of Sciences, 875 Howard Street, San Francisco, California, 94103-3009. Telephone: 415-321-8000. Application to Mail at Periodicals Postage Rates is Pending at San Francisco, CA.

POSTMASTER: Send address changes to California Academy of Sciences Member Publication, 875 Howard Street, San Francisco, CA 94103.

The opinions expressed by the authors do not necessarily reflect the policy of the California Academy of Sciences.

Printed on recycled paper.
40% Recycled 30% Post Consumer Waste

Tiny Assassins



These spiders don't build webs to snare their dinner. They use their elongated jaws to stab their prey with venomous fangs.

Photo by: Jeremy Miller.

Academy scientists recently discovered nine new species of assassin spiders, which survive by preying on other spiders.

This pair of assassin spiders is engaged in a courtship ritual.

Photo by: Jeremy Miller.

They may be small, but assassin spiders are among the most dangerous spiders on the planet - from the perspective of another spider, that is. These tiny arachnids in the Archaeidae family are only about 2 mm (less than 1/8 inch) long, but their bizarre fangs and

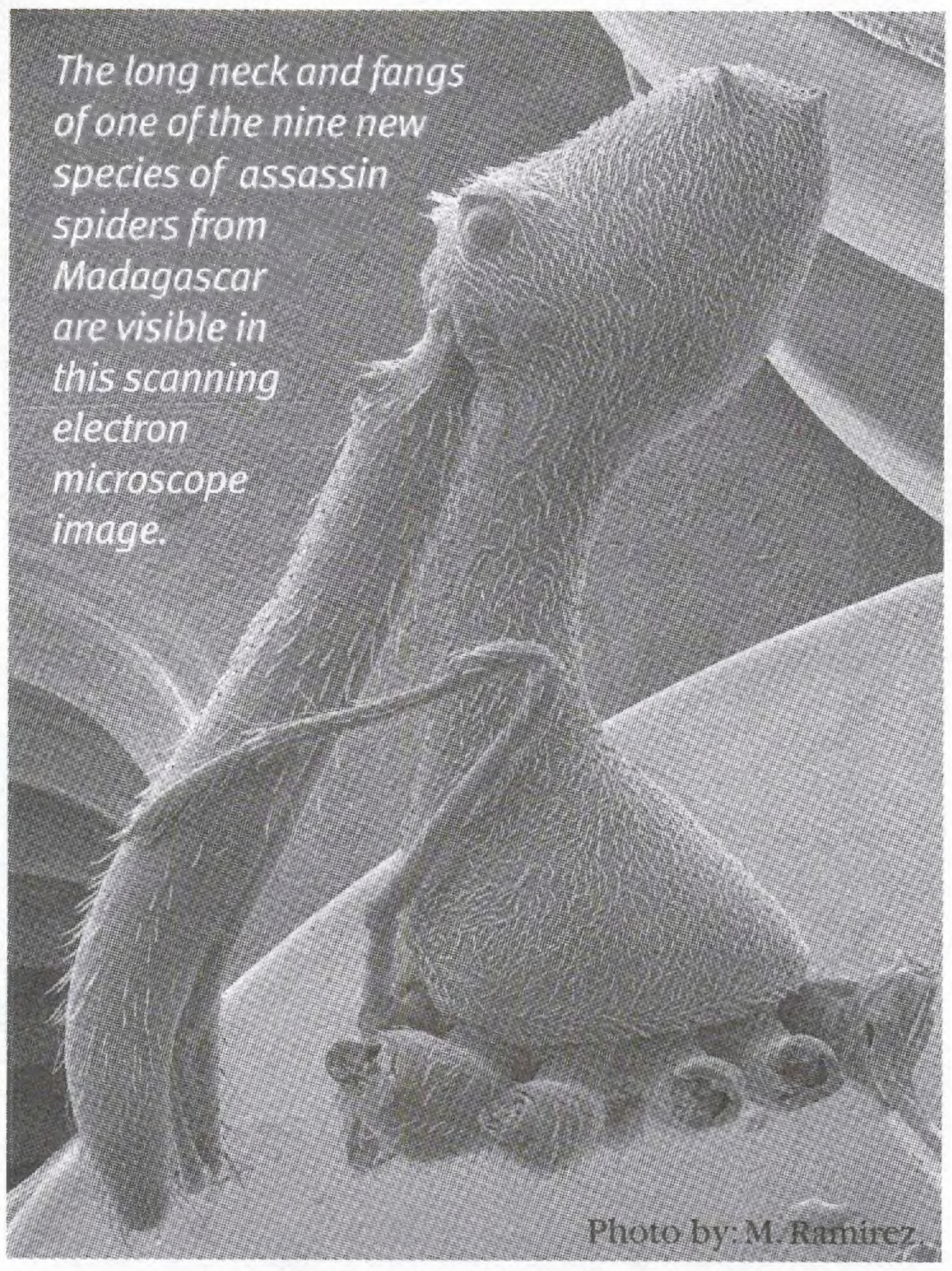
Hannah Wood is currently observing and collecting assassin spiders in South Africa.

Photo by: Jeremy Miller.

spider-hunting practices have earned them a reputation as the world's most grotesque spiders.

They hunt by stabbing their prey with venom-filled fangs that are attached to the ends of extremely elongated jaws. These specialized jaws are about ten times longer than the jaws of most other spiders their size. To support these long jaws and prevent them from dragging along the ground, assassin spiders have also evolved elongated necks. The combination allows them to strike their prey without having to approach too closely.

The fossil record shows that assassin spiders were once widely distributed across the planet, but today they are known only from Australia, South Africa, and Madagascar. Until recently, only about a dozen species were recognized. However, nine new species are about to be added to the list, almost doubling the known members of the family. For the past few years, Academy entomologist Charles Griswold and San Francisco State University graduate student Hannah Wood have been working to document the spiders of Madagascar as part of the Academy's ongoing arthropod survey of the country. Since the survey was started in 2000, over 2 million arthropod specimens have been processed. Among them, Griswold and Wood noticed a number of tiny Archaeidae spiders that looked suspiciously like new species.



The long neck and fangs of one of the nine new species of assassin spiders from Madagascar are visible in this scanning electron microscope image.

Photo by: M. Ramirez

Wood conducted molecular and morphological studies and found that nine new species of assassin spiders were included in the specimens from Madagascar. Surprisingly, the DNA data also revealed that the presence of elongated necks among Archaeidae spiders had evolved at least two separate times. A classic example of convergent evolution, her findings suggest that the need to strike out at prey from a distance encouraged the evolution of extended body parts on more than one occasion.

What type of prey has driven this adaptation? That is a question that Griswold and Wood are now working to answer. Wood just spent several weeks in Madagascar observing assassin spider behavior and is now conducting the same studies in South Africa. Meanwhile, Griswold is searching for assassin spiders in the only other place on the planet that they are currently known to exist – Australia. "Our findings will provide insights into the evolution of feeding mechanisms not just in spiders," says Griswold, "but in animals in general."

All programs are free with Academy admission unless otherwise noted. For additional program information please see Highlights on pages 6-7.

Children's Storytime

***Every Saturday; Every second & fourth Thursday* 10:30am**

Children ages 3-5 are invited to join us for stories about some of the habitats featured in the HOTSPOT exhibit. The June theme will be "Lake Home," July will be "Desert Home," and August will be "Beach Home."

Creature Feature: Owls and their Prey

***Every Thursday in June* 11:30am**

Learn about the natural history of barn owls and dissect owl pellets with Naturalist Center staff. Practice using a simplified dichotomous key to identify the skulls found in owl pellets.

Make a Music Video

***Saturday June 10* 2:30 – 4:30pm**

what will you create?

zeum

Join Zeum, San Francisco's innovative arts and technology museum for kids, and learn about music industry. The Academy's scientific specimens will be the stars of the show as you make your own music video.

In Hot Water

***Every Wednesday, June & July* 11:30am**

Find out how amazing tide pool creatures are able to survive the changes in their environment during low tide.

Hot Coastal Creatures

***Every Thursday, June & July* 1:30pm**

Explore the amazing world of California's sea creatures.

Science Secrets

***Sundays, June 18 & 25, July 2 & 9, August 6 & 27* 11:30am & 1:30pm**

Experience the natural world by examining specimens from the Academy's education collection.

Creature Feature: Reptiles and Amphibians

***Every Thursday in July* 11:30am**

Join the Naturalist Center staff in an activity to discover how reptiles and amphibians differ from one another. Handle specimens from our collection and come face-to-face with a live animal.

Docent Surprise

***Every Friday in July* 11:30am**

Discover something new with a friendly, knowledgeable Academy docent.

Sand Crab Dissection

***Every Friday in July* 1:30pm**

Pick up hot dissection tips from interns in the Academy's Careers in Science program as you explore the anatomy of the sand crab.

Sustainable DIY Projects

***Friday, July 14* 2:30 – 4:30pm**

ReadyMade

DIY (do it yourself) projects are a hot new trend. Learn how to create innovative home products out of recycled and renewable resources from the professionals at *ReadyMade* magazine. Then try your hand at making your own!

Salsa Lessons

***Friday, July 28* 2:30 – 4:30pm**

mdc
METRONOME
DANCE CENTER

Salsa doesn't have to come with chips. See the sway of hips with a live Latin performance and then try it yourself in a follow up tutorial with local ballroom instructors from Metronome Dance Center.

Science in Action

***Every Wednesday, July & August* 1:30pm**

Academy scientists share findings from their current research projects around the world.

Creature Feature: Tide Pool Critters and Related Fossils

***Every Thursday in August* 11:30am**

Compare fossils to live tide pool animals that inhabit the rocky Pacific Coast. Learn how these animals' special adaptations have helped them survive in that harsh environment since before the time of dinosaurs.

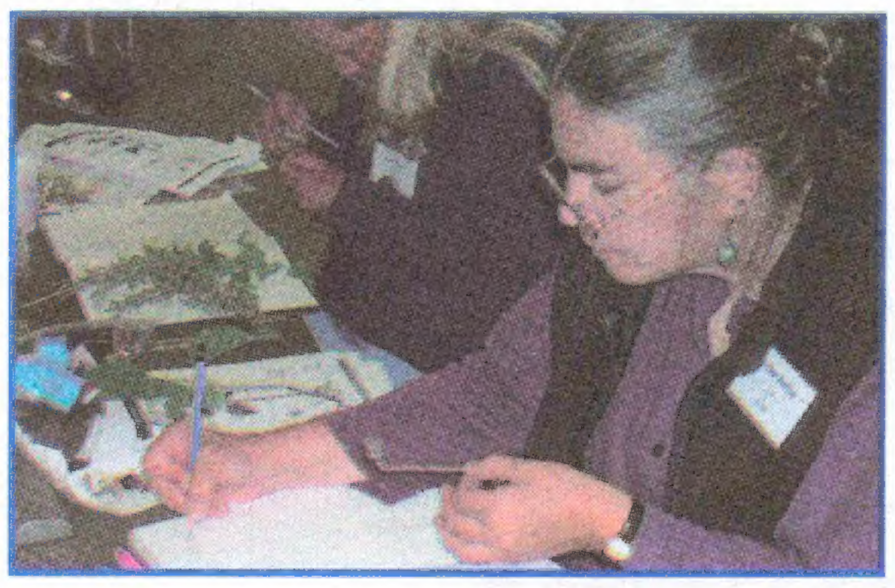
Dive In!

***Every Thursday in August* 1:30pm**

Explore life in the seas—both ancient and modern—with hands-on activities for visitors of all ages.

Science in the City— Summer Teacher Workshop

June 19-23, 2006



Ever wonder how to integrate San Francisco's informal science centers into your curriculum? Join twenty-four educators for a weeklong exploration of plant and animal life using the resources of the California Academy of Sciences, San Francisco Botanical Garden, and the San Francisco Zoo. This is a hands-on workshop that uses sketching and active observation to discover and enhance understanding of the natural world.

Fee: $100
Enrollment limited to 25.
For addition information:
(415) 321-8104 or
ltopinka@calacademy.org

STARGAZING AT THE SF BOTANICAL GARDENS

August 25th, 8:00-9:30 pm
(cancelled if sky is overcast)
Members $8 (family $13),
Non-members $12 ($18)

The Academy and the San Francisco Botanical Garden jointly offer this tour of the night sky, led by Bing Quock of the Academy's Morrison Planetarium and held on the grounds of the SF Botanical Gardens in Golden Gate Park. If the sky is clear, we'll point out the constellations of late summer and view some of the deep-sky treasures that can be seen among them with a medium-size telescope, including the Lagoon Nebula, the Ring Nebula, globular star clusters, and the planet Jupiter. During the evening, at least one satellite can usually be seen, even from the city, and sharp-eyed observers have even spotted meteors! Session is cancelled if the sky is overcast.

For more information, please call the Botanical Garden's Education Department - (415) 661-1316, ext. 354.

HOT AND WILD CALIFORNIA

Explore California's amazing biodiversity by meeting live animals and discovering museum specimens. Visitors of all ages will enjoy these special programs. **Each program is offered at 11:30 am and 1:30 pm.**

HOT Summer Night Predators

Saturday, May 27

Meet live California owls.

Animals from the Lindsay Wildlife Museum

Saturdays, June 10 and 24, July 22, and August 5

Meet live animals from California.

A Foxy Face-to-Face

Saturdays, June 17 and July 15

Meet a live arctic fox and explore the connection between California and the world's biodiversity.

Crawly California Arthropods

Saturday, July 1

Meet live insects, spiders, and millipedes.

California Arachnids

Saturday, July 8

Meet a live tarantula, and see scorpion specimens.

California Mammals and Birds

Saturday, July 29

Meet a live grey fox, a North American porcupine, and a Harris' hawk.

FOSSIL FOCUS

Dinosaurs are coming to the Academy on September 16. In preparation for this exciting new exhibit, bone up on fun fossil facts during the month of August.

Raptor Dinosaurs

***Fridays, June 23, July 14, & August 4* 11:30am-1:00pm**

A lively presentation for all ages on *Velociraptor* and its close relatives. Academy "Dino Docent" Ralph Miller uses fossil casts and mechanical models to show you what these amazing Cretaceous killers were really like, inside and out.

Fossils from the Sea

***Every Wednesday in August* 11:30am**

Find out how fossils provide the evidence for evolution of marine life.

Life Through Time

***Every Friday in August* 11:30am & 1:30pm**

Academy docents and staff guide you on an exploration of ancient life forms.

Prehistoric Beasts

***Saturday, August 12* 11:30am & 1:30pm**

Meet a live animal, and learn about some of California's most ancient residents. This program is presented in partnership with the Lindsay Wildlife Museum.

Ancient Reptiles

***Saturday, August 19* 11:30am & 1:30pm**

Meet a live American alligator, and learn why these and other ancient reptiles are often called living fossils.

HOT CALIFORNIA CUISINE

Sample the hottest trends in California cuisine, which emphasizes the use of local, sustainably-harvested products.

Hot from the Oven

***Saturday, June 3* 2:30 – 4:30pm**

For those of you who blaze your own trail - bake your own bar! TrailBlaze is a homemade, eco-friendly alternative to individually packaged energy bars. Learn how simple it is to make your own hot-from-the-oven bars, and discover how delicious a healthy boost can taste.

Matisse & Jack*s™
TrailBlaze™
energy bar baking mix

Summer Samplings from Berkeley Bowl

***Saturday, June 17, 24* 2:30 – 4:30pm**

Berkeley Bowl, a local favorite known for its produce and sustainable selection, will demonstrate just how great summer goodies can be. Come in and enjoy the sweeter side of summer!

Spicy Morsels from Casa Sanchez Foods

***Saturday, July 1* 2:30 – 4:30pm**

The Sanchez family has been making tortilla chips and salsa with all-natural ingredients since the 1920s. Come sample salsa from this local, award-winning favorite.

A Taste of Farallones Catering

***Friday, July 7* 2:30 – 4:30pm**

Experience fine California cuisine with fare from Farallones Catering's executive chefs, Nathan Downs & Alexandra Drexler.

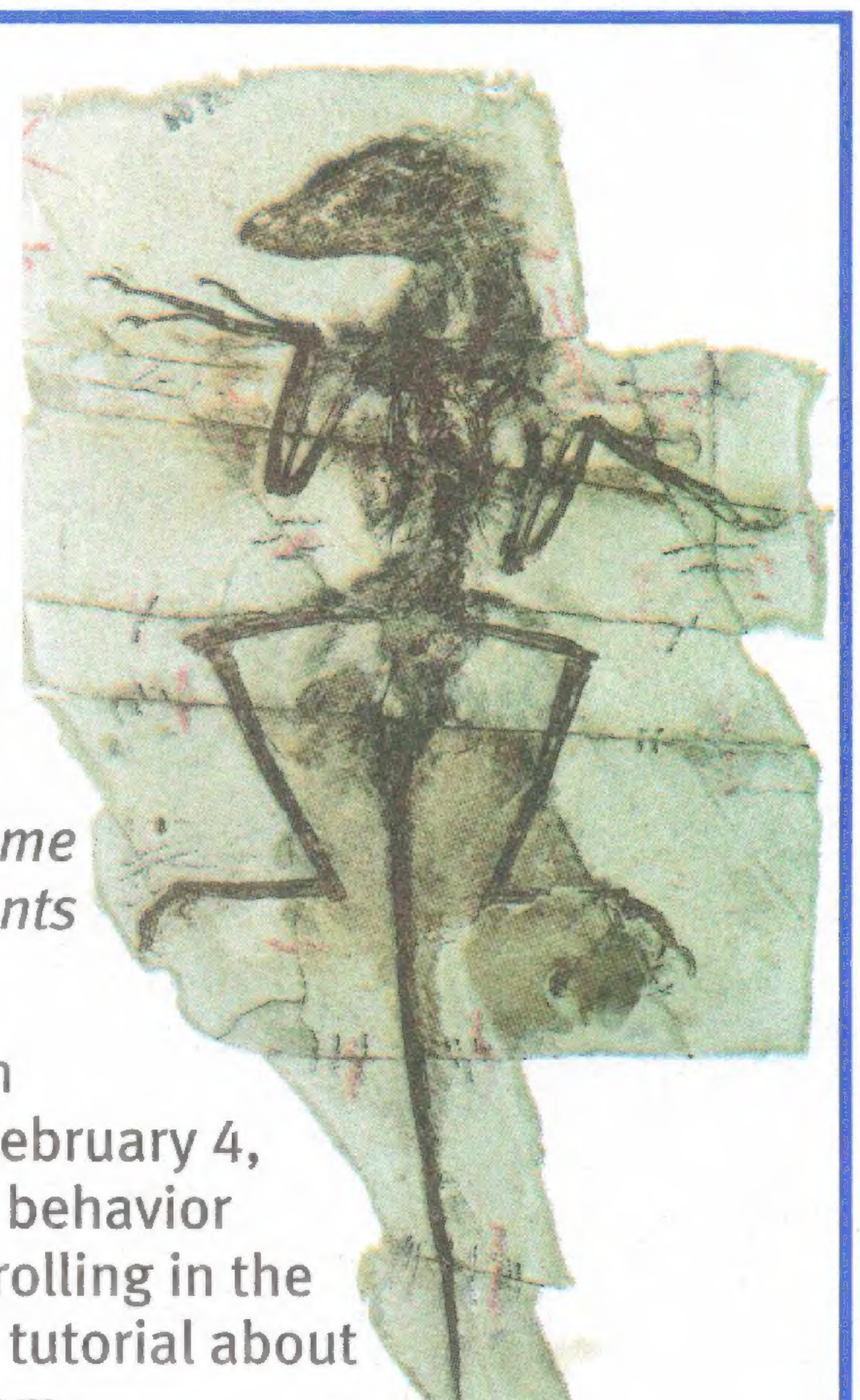
Boudin Bakery & Anchor Brewing Tasting

***Friday, July 21* 2:30 – 4:30pm**

Join these two San Francisco icons for a delicious tasting. Sample Boudin's signature San Francisco sourdough and pair it with a classic beer from Anchor's traditional copper brewhouse.

THE DOCENT'S CORNER

DINOSAURS ARE COMING TO THE ACADEMY



Dinosaur fossils have been known for millennia, though their true nature was not always recognized. The early Chinese thought they were the bones of dragons, and Europeans thought they were the remains of giants and other creatures killed by the Great Flood. Now, we know that dinosaurs roamed the planet for 160 million years. Some ate plants and some ate each other. Some are thought to have been warm-blooded, and the fossil record suggests that some were good parents. Today's birds are direct descendants of dinosaurs.

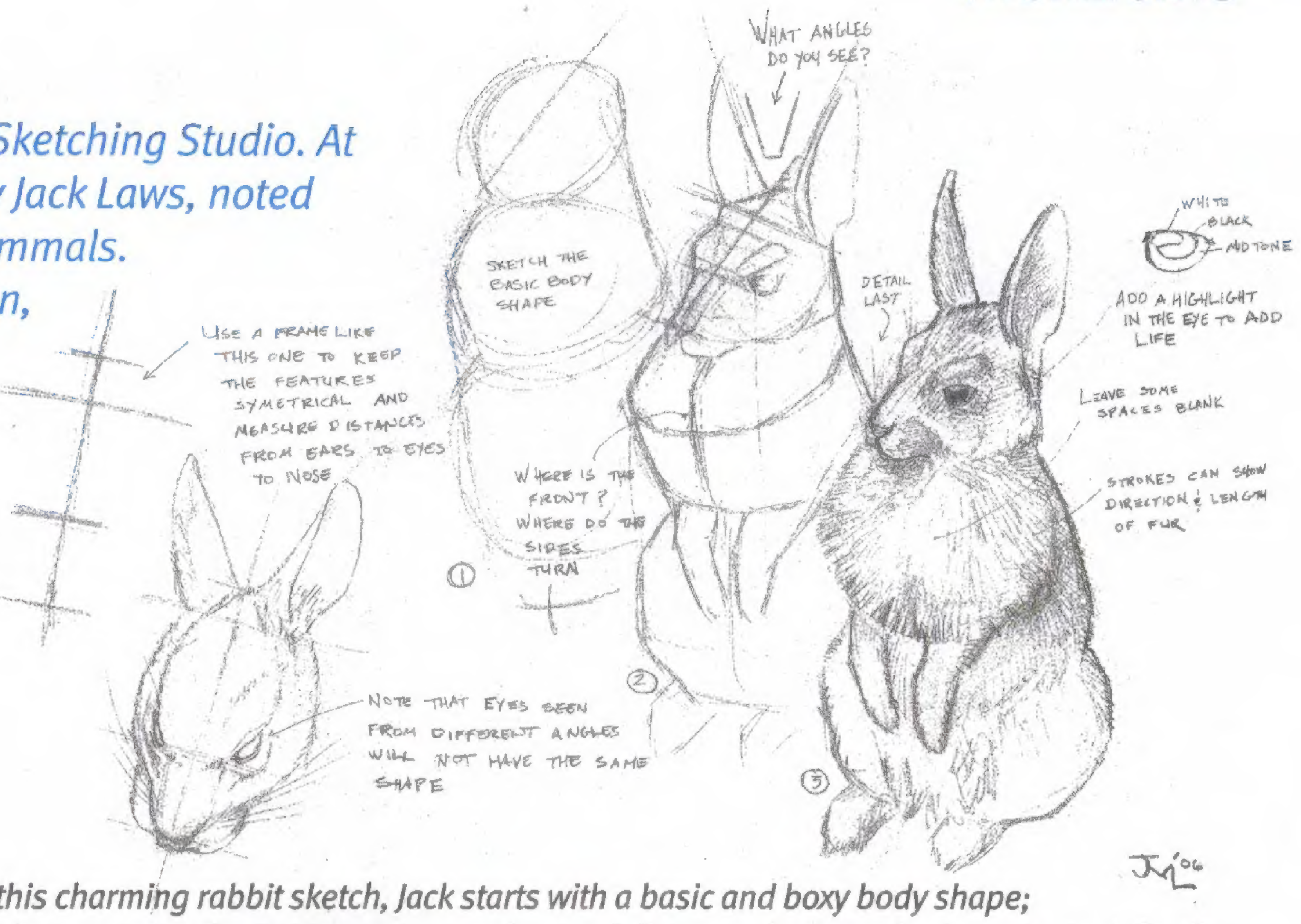
Dinosaurs: Ancient Fossils, New Discoveries will be on display at the Academy from September 16, 2006 – February 4, 2007. You can help teach Academy visitors about the behavior – and misbehavior – of these amazing animals by enrolling in the next docent training course, which includes a special tutorial about recent dino discoveries. Classes meet once a week from mid-August through late September. We are especially looking for energetic docents willing to share their weekends with Academy visitors. For more information and applications, call Rosalind Henning at (415) 321-8111.

WILDLIFE SKETCHING

Bring your sketchbook and pencil and participate in the Academy's Summer Sketching Studio. At various locations in HOTSPOT and the Aquarium, visitors will find sketches by Jack Laws, noted naturalist and artist, that illustrate techniques for drawing fish, birds and mammals. The Academy's sketching programs are supported in part by FLAX art & design, whose San Francisco flagship store features classes, galleries, and over 30,000 items to satisfy your creative needs.

FLAX art & design

For guided sketching opportunities, the Academy has scheduled the following workshops and sketching demonstrations:


WHAT ANGLES DO YOU SEE?
SKETCH THE BASIC BODY SHAPE
USE A FRAME LIKE THIS ONE TO KEEP THE FEATURES SYMETRICAL AND MEASURE DISTANCES FROM EARS TO EYES TO NOSE
WHERE IS THE FRONT? WHERE DO THE SIDES TURN
DETAIL LAST
WHITE
BLACK
MIDTONE
ADD A HIGHLIGHT IN THE EYE TO ADD LIFE
LEAVE SOME SPACES BLANK
STROKES CAN SHOW DIRECTION & LENGTH OF FUR
NOTE THAT EYES SEEN FROM DIFFERENT ANGLES WILL NOT HAVE THE SAME SHAPE
①
②
③
JL '06

For this charming rabbit sketch, Jack starts with a basic and boxy body shape; next he pays attention to symmetry, angles, and distances between body parts; and, finally, adds details such as fur and eye highlights. "It's all about practice," Jack will tell you.

The Artist's Studio Live! ***Saturday June 3 and Sunday June 4***
Watch as Academy naturalist and artist Jack Laws creates an illustrated field guide to more than 1,200 species of plants, fungi and animals of the Sierra Nevada. ***10:30am - 5:00pm***

Sketching Wild California ***Saturday June 3 and Sunday June 4***
Join a sketching workshop with Academy naturalist and scientific illustrator Jack Laws. Jack will guide participants through various new sketching stations around the museum floor. ***11:30am & 1:30pm***

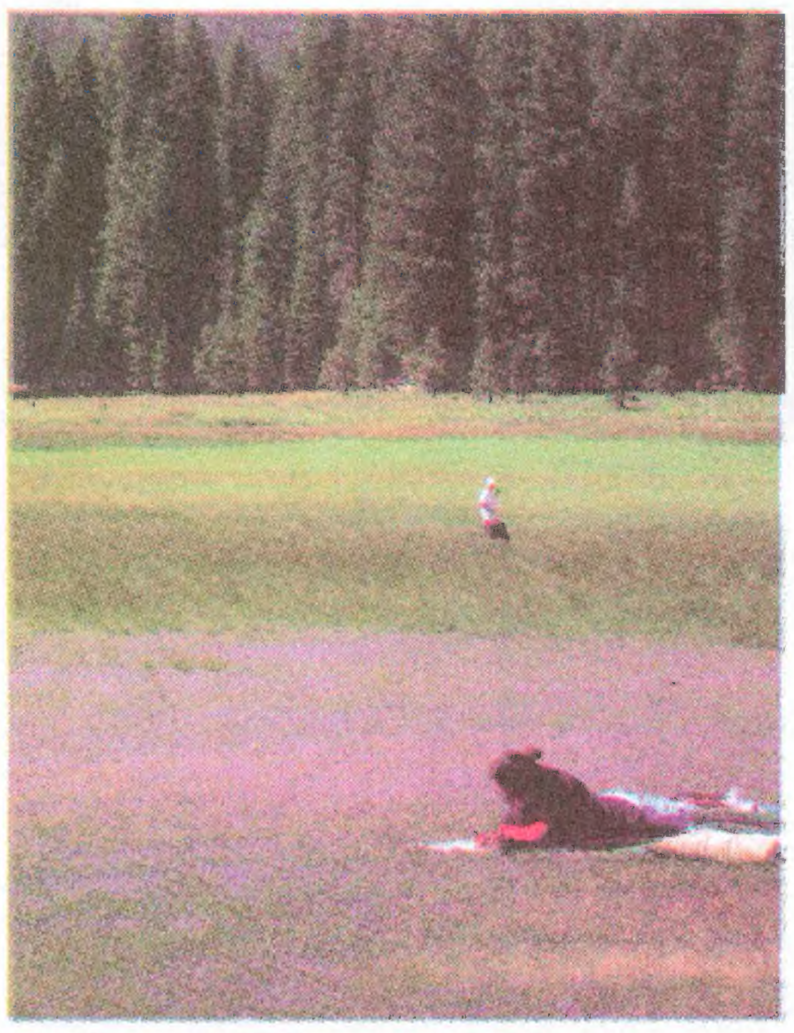
Nature Inspired Sketching ***Wednesdays in June***
Join local artist Tyler Cohen as she leads informal, one-hour sketching workshops. Any of the live and preserved animals, plants, and artifacts in HOTSPOT, Steinhart Aquarium, or the Naturalist Center may serve as models. The focus of each class is flexible and can be tailored to visitors' desires. Topics may include capturing movement, rendering scales and feathers, creating basic shapes and forms, and pencil stroke techniques. ***1:30pm***

Wildlife Cartooning ***Every Friday in June; Sunday, July 16; Sunday, August 13; and Saturday, August 26***
Learn the art of sketching wildlife in motion with artist Diane Sands. ***11:30am & 1:30pm***

Sketching Studio ***Every Thursday in June, July, and August***
Visit the Naturalist Center and learn how to sketch birds, skulls, insects and other specimens from the Academy's collection. Sketching paper and pencils provided. ***12:30-1:30pm***

Nature Journaling Workshop in the Trinity Alps

July 21-24, 2006



Spend three relaxing days at the Academy's property near Big Flat Campground (elevation 5000 ft) in the heart of the Trinity Alps, about three hours northwest of Redding, and nurture your artistic side. Academy staff will lead easy to moderate hikes of 3-5 miles and provide instruction in journaling, sketching, and the natural history of the area. This workshop is for the adult beginner—no previous art experience is required. Participants will meet at the Academy's camp in the Trinity Alps and bring their own tent and sleeping bag. Four-wheeled vehicles with high clearance are recommended, but not absolutely necessary. Fee includes all meals from Friday dinner through Monday lunch.

Fee: $210 members/ $235 non-members.
Enrollment is limited to 15. For additional information: (415) 321-8104 or ltopinka@calacademy.org

Jo-Ann Ordano

Robert Potts

Gerald & Buff Corsi

Jo-Ann Ordano

Gerald & Buff Corsi

Sherry Ballard

TRINITY ALPS BACKPACKING TRIP

August 3 through 7
Adult trip with Academy staff:
Ashley Conrad-Saydah and Jessica Chiarchiaro

Seeking summer solitude? Looking for a new adventure? What better way to satisfy your cravings than trekking though the Trinity Alps to the beautiful Caribou Basin. Along the way, you will find time to increase your natural history knowledge, learn to identify constellations in the night sky, and capture the spectacular beauty of the entire region on your sketchpad. Let the Trinity Alps be your muse for watercolor painting, nature journaling and good ol' relaxation. Your guides, Jessica and Ashley, two wilderness-safety certified outdoor educators, will lead this five-day excursion starting at the Academy's reserve at Big Flat Meadow and continuing through rugged landscapes dotted with alpine lakes en route to the largest lake in the Trinity Alps, Caribou Lake. At 20 miles roundtrip with a total elevation change of nearly 4,500 feet, this trip is intended for experienced backpackers. But fear not, every step will be well worth it. The payoff: sweeping views, flower-filled meadows, and exhilarating lake dips combine to create the perfect summer adventure.

Trip limited to 9 participants. Age and Health Requirements: 18 + with no significant or limiting health conditions. Participants must be in good physical health and able to carry a pack of up to 45 pounds. **Price includes all meals, most group gear, sketching supplies, and transportation from CAS. Reduced price available for personal transportation. $325 members; $350 non members. For more information, call 415-321-8000.**

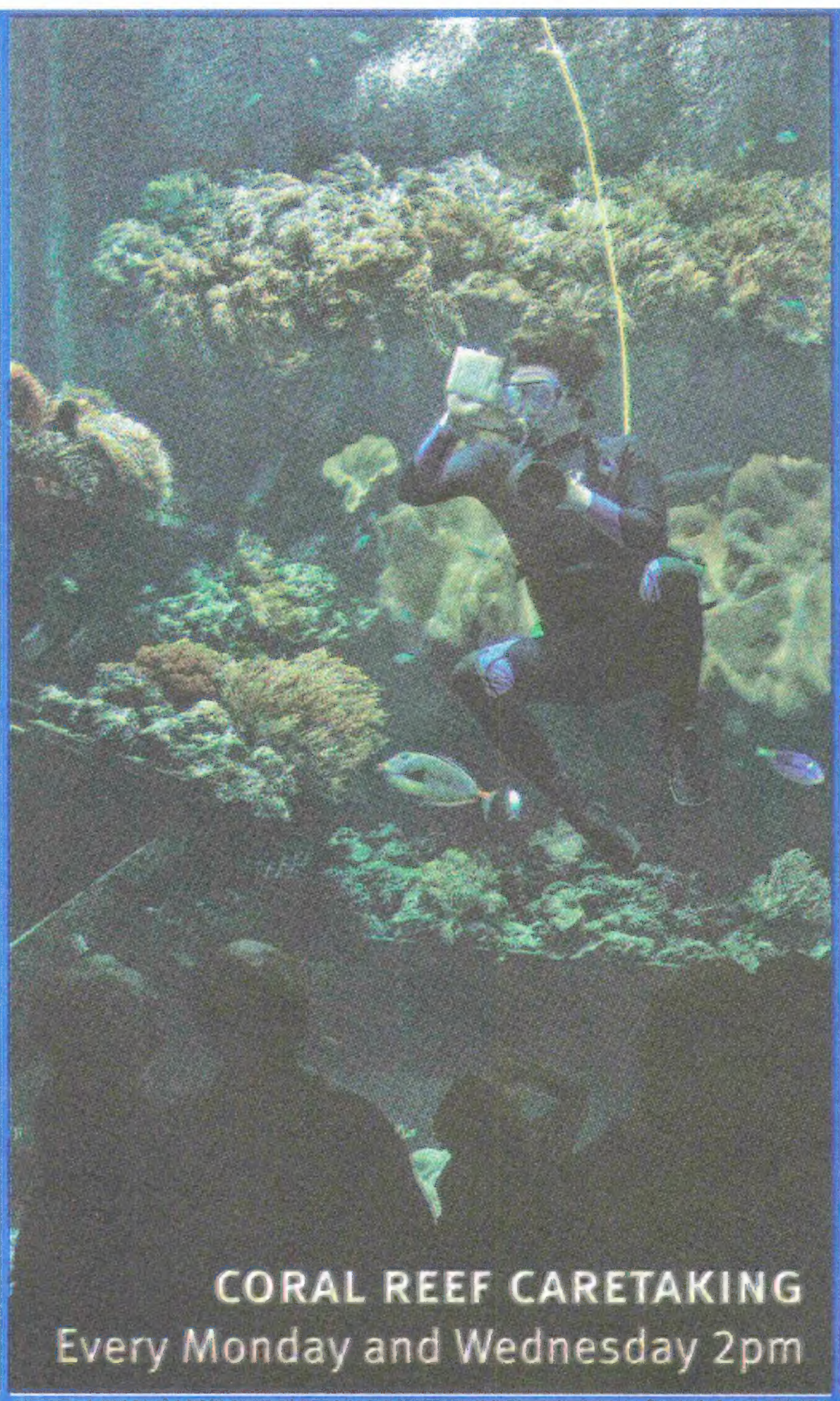
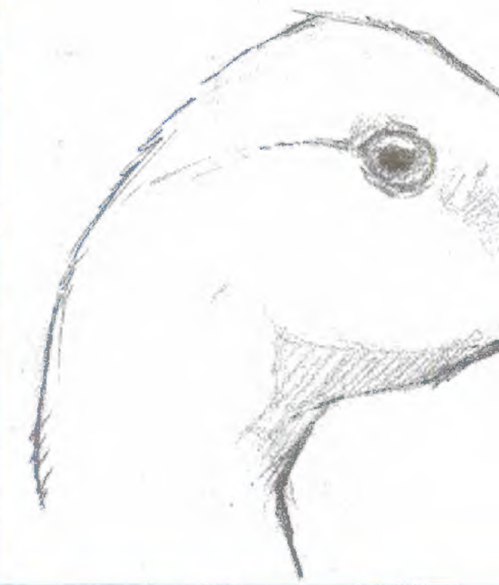
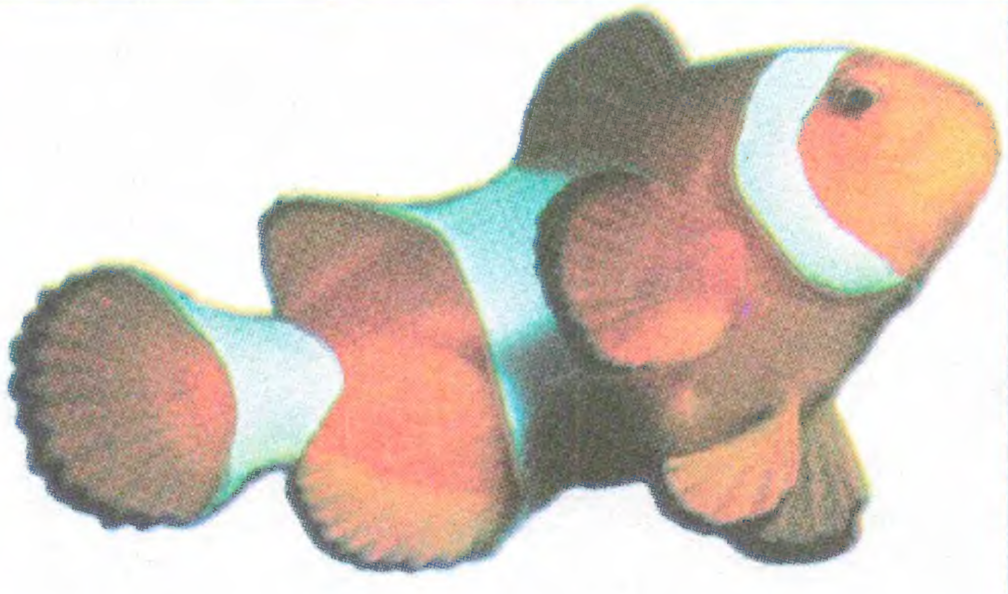
JUNE

Please see Programs on page 5 and Higlights on pages 6 and 7 for a full description. For more information, check our website: *www.calacademy.org*.

camp edventure More!

Camp *Edventure More!* is an inspiring enrichment day camp that allows children to learn about themselves and the world around them through an innovative science, fine arts, and recreation curriculum designed by the Academy and other San Francisco cultural institutions.

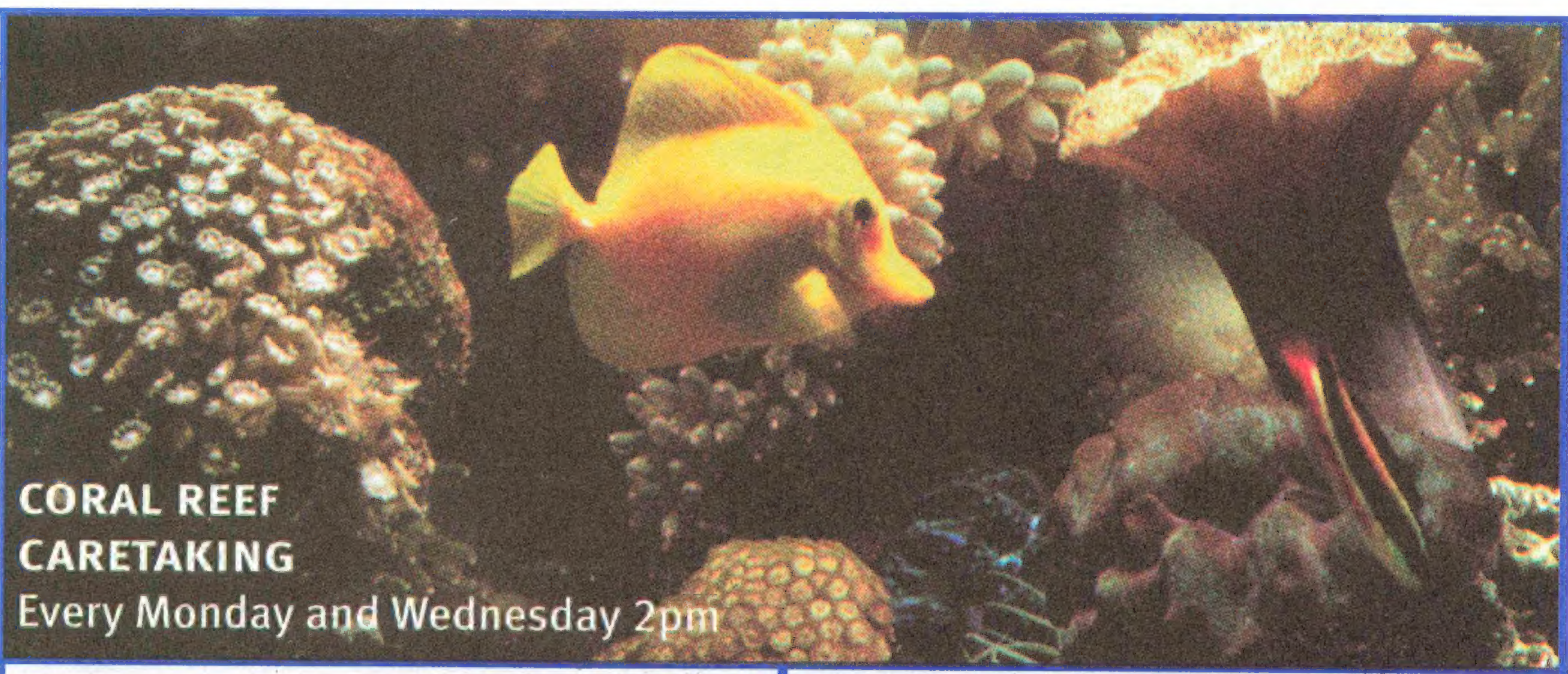
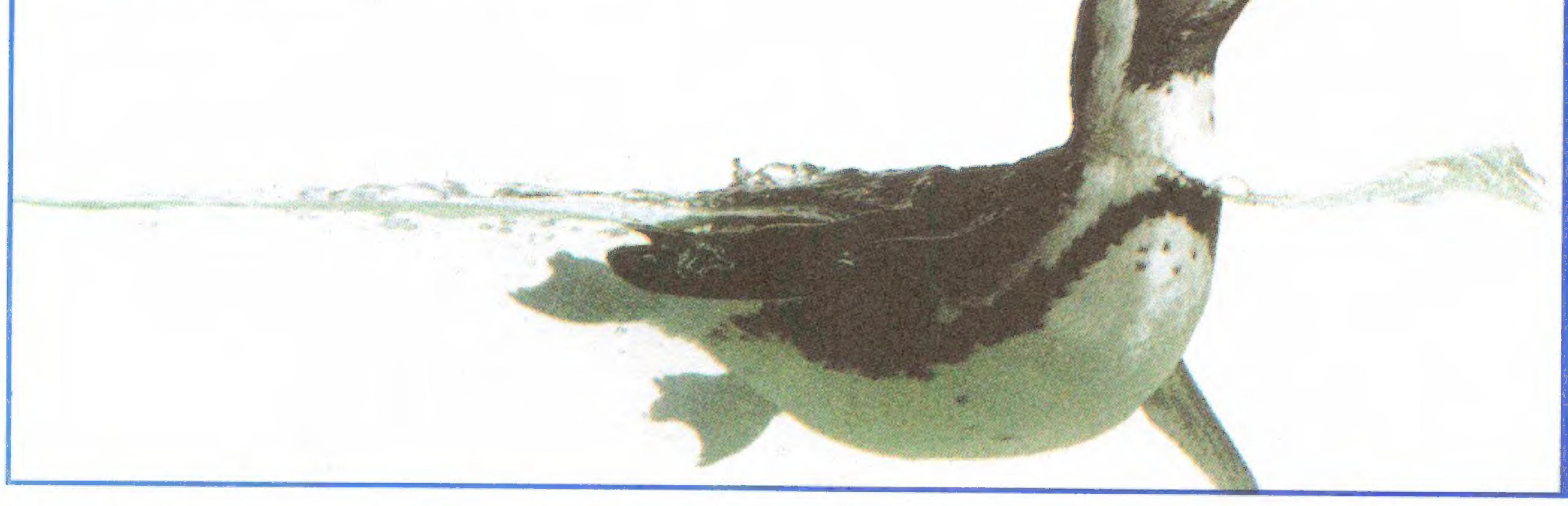
Visit http://edventuremore.com for more information.
ASK ABOUT THE ACADEMY MEMBERS AFFILIATE DISCOUNT!

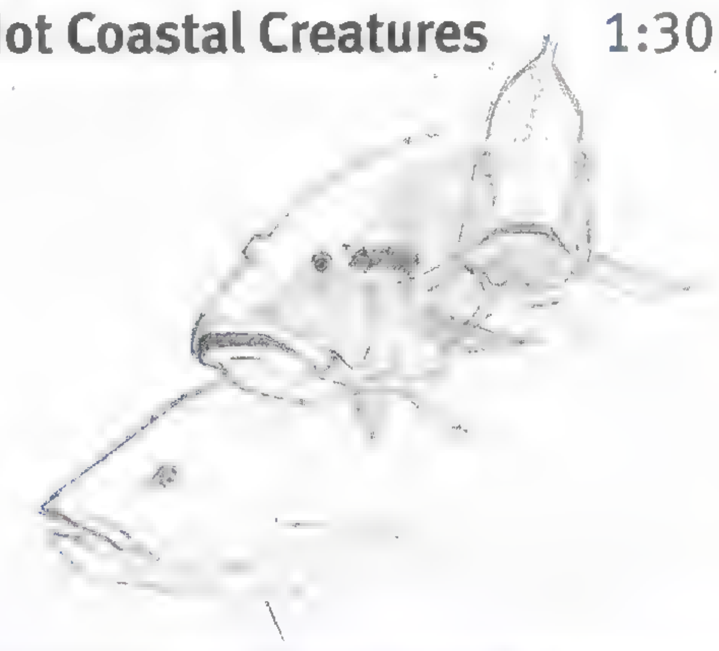
Sunday	Monday	Tuesday	Wedn
4 The Artist Studio Live! 10:30am Wildlife Sketching 11:30am Wildlife Sketching 1:30pm 	 CORAL REEF CARETAKING Every Monday and Wednesday 2pm	**6** Visit the **NATURE NEST** Every Day 10am-5pm 	**7** In Hot Water Wildlife Sket
11		**PENGUIN FEEDING** Every Day 11am & 3:30pm 	**14** In Hot Water Wildlife Sket
18 Science Secrets 11:30am Science Secrets 1:30pm	**19** Dean Lecture (JCC) 7:30pm	**20** Academy Lecture 2:00pm Academy Lecture 7:30pm	**21** In Hot Water Wildlife Sket 
25 Science Secrets 11:30am Science Secrets 1:30pm	 **SUPPORT THE ACADEMY BY SHOPPING ONLINE** http://calacademy.freepledge.com/	**27** Special Lecture (JCC) 8:30pm	**28** In Hot Water Wildlife Sket

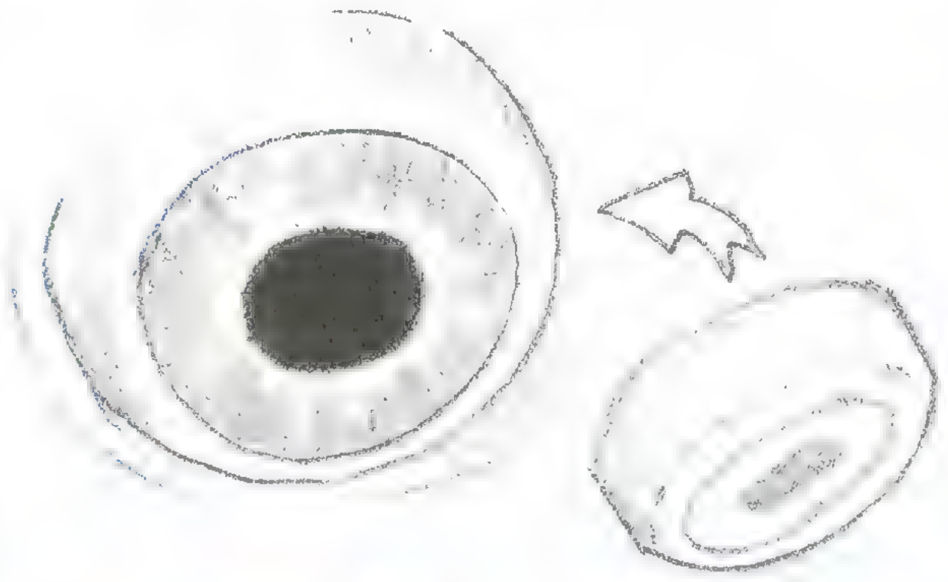
esday	Thursday	Friday	Saturday
	1 Creature Feature 11:30am Wildlife Sketching 12:30pm Hot Coastal Creatures 1:30pm 	**2** Wildlife Sketching 11:30am Wildlife Sketching 1:30pm **SNAKE FEEDINGS** Every Friday 2pm	**3** Story Time 10:30am The Artist Studio Live! 10:30am Wildlife Sketching 11:30am Wildlife Sketching 1:30pm Hot California Cuisine 2:30pm
11:30am hing 1:30pm 	**8** Story Time 10:30am Creature Feature 11:30am Wildlife Sketching 12:30pm Hot Coastal Creatures 1:30pm	**9** Wildlife Sketching 11:30am Wildlife Sketching 1:30pm	**10** Story Time 10:30am Hot & Wild California 11:30am Hot & Wild California 1:30pm Make a Music Video 2:30pm
11:30am hing 1:30pm	**15** Creature Feature 11:30am Wildlife Sketching 12:30pm Hot Coastal Creatures 1:30pm 3rd Thursday 5:00pm 3rd THURSDAYS CLOWNFISH, CORALS & COCKTAILS CONVERGE	**16** Wildlife Sketching 11:30am Wildlife Sketching 1:30pm	**17** Story Time 10:30am Hot & Wild California 11:30am Hot & Wild California 1:30pm Hot California Cuisine 2:30pm
11:30am hing 1:30pm 	**22** Story Time 10:30am Creature Feature 11:30am Wildlife Sketching 12:30pm Hot Coastal Creatures 1:30pm	**23** Fossil Focus 11:30am Wildlife Sketching 11:30am Wildlife Sketching 1:30pm 	**24** Story Time 10:30am Hot & Wild California 11:30am Hot & Wild California 1:30pm Hot California Cuisine 2:30pm
11:30am hing 1:30pm	**29** Creature Feature 11:30am Wildlife Sketching 12:30pm Hot Coastal Creatures 1:30pm	**30** Wildlife Cartooning 11:30am Wildlife Cartooning 1:30pm	 **PENGUIN FEEDING** Every Day 11am & 3:30pm

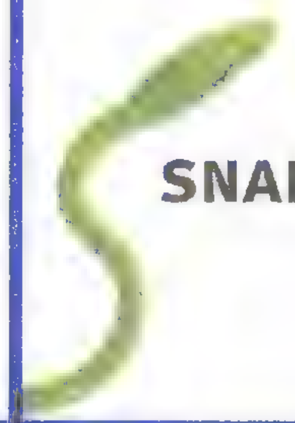
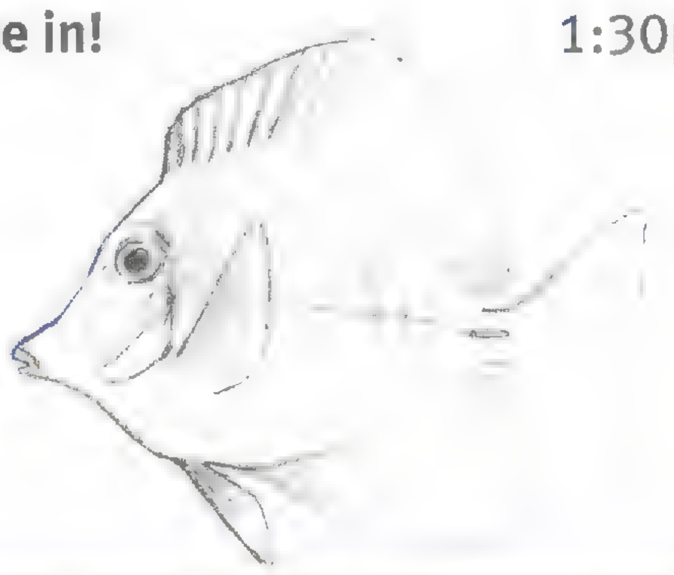
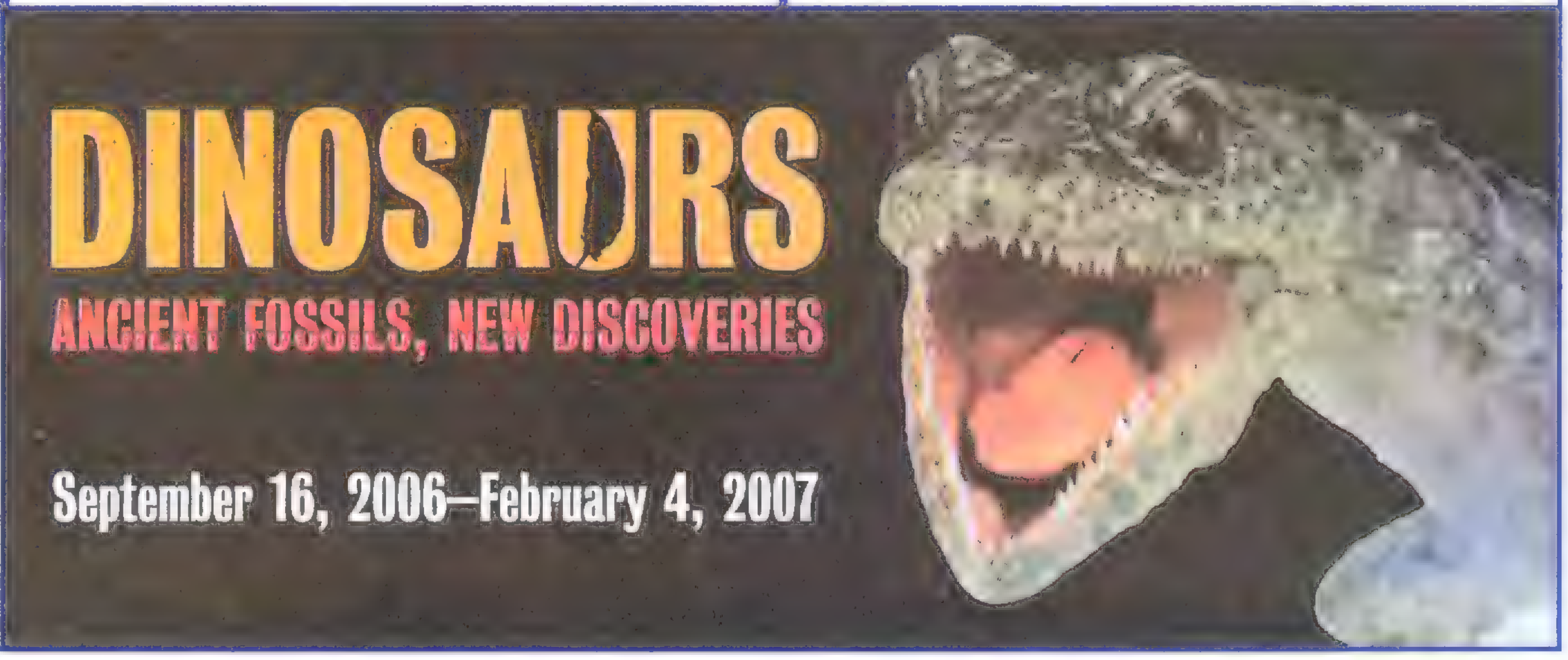
JULY

Please see Programs on page 5 and Higlights on pages 6 and 7 for a full description. For more information, check our website: *www.calacademy.org*.

Sunday	Monday	Tuesday	Wedn
2 Science Secrets 11:30am Science Secrets 1:30pm	 **CORAL REEF CARETAKING** Every Monday and Wednesday 2pm		**5** In Hot Water Science in Act
9 Science Secrets 11:30am Science Secrets 1:30pm	**10**	**11**	**12** In Hot Water Science in Act
16 Wildlife Sketching 11:30am Wildlife Sketching 1:30pm	**17**	**18** Academy Lecture 2:00 pm Academy Lecture 7:30 pm	**19** In Hot Water Science in Act
PENGUIN FEEDING Every Day 11am & 3:30pm 		**25**	**26** In Hot Water Science in Act

esday	Thursday	Friday	Saturday
		SNAKE FEEDINGS Every Friday 2pm	**1** **Story Time** 10:30am **Hot & Wild California** 11:30am **Hot & Wild California** 1:30pm **Hot California Cuisine** 2:30pm
11:30am ion 1:30pm	**6** **Creature Feature** 11:30am **Wildlife Sketching** 12:30pm **Hot Coastal Creatures** 1:30pm 	**7** **Docent Surprise** 11:30am **Sand Crab Dissection** 1:30pm **Hot California Cuisine** 2:30pm	**8** **Story Time** 10:30am **Hot & Wild California** 11:30am **Hot & Wild California** 1:30pm
11:30am ion 1:30pm	**13** **Story Time** 10:30am **Creature Feature** 11:30am **Wildlife Sketching** 12:30pm **Hot Coastal Creatures** 1:30pm	**14** **Fossil Focus** 11:30 pm **Docent Surprise** 11:30am **Sand Crab Dissection** 1:30pm **Sustainable DIY Projects** 2:30pm	**15** **Story Time** 10:30am **Hot & Wild California** 11:30am **Hot & Wild California** 1:30pm
11:30am ion 1:30pm	**20** **Creature Feature** 11:30am **Wildlife Sketching** 12:30pm **Hot Coastal Creatures** 1:30pm **3rd Thursday** 5:00pm 3rd THURSDAYS CLOWNFISH, CORALS & COCKTAILS CONVERGE	**21** **Docent Surprise** 11:30am **Sand Crab Dissection** 1:30pm **Hot California Cuisine** 2:30pm	**22** **Story Time** 10:30am **Hot & Wild California** 11:30am **Hot & Wild California** 1:30pm
11:30am ion 1:30pm	**27** **Story Time** 10:30am **Creature Feature** 11:30am **Wildlife Sketching** 12:30pm **Hot Coastal Creatures** 1:30pm 	**28** **Docent Surprise** 11:30am **Sand Crab Dissection** 1:30pm **Salsa Lessons** 2:30pm	**29** **Story Time** 10:30am **Hot & Wild California** 11:30am **Hot & Wild California** 1:30pm

Sunday	Monday	Tuesday	Wedne
# AUGUST Please see Programs on page 5 and Higlights on pages 6 and 7 for a full description. For more information, check our website: *www.calacademy.org*.		1	2 Fossil Focus Science in Actic
6 Science Secrets 11:30am Science Secrets 1:30pm	7	8 **SIGN UP FOR eNews** http://www.calacademy.org/enews/subscribe.html	9 Fossil Focus Science in Actic
13 Wildlife Sketching 11:30am Wildlife Sketching 1:30pm 	**PENGUIN FEEDING** Every Day 11am & 3:30pm 	15 Academy Lecture 2:00 pm Academy Lecture 7:30 pm	16 Fossil Focus Science in Actio
 SAVE THE DATE! *22nd Annual Run* *November 26, 2006* Prepare to run or volunteer on the Sunday of Thanksgiving weekend!		22	23 Fossil Focus Science in Actio
27 Science Secrets 11:30am Science Secrets 1:30pm	 **CORAL REEF CARETAKING** Every Monday and Wednesday 2pm		30 Fossil Focus Science in Actio

sday	Thursday	Friday	Saturday
11:30am n 1:30pm	**3** Creature Feature 11:30am Wildlife Sketching 12:30pm Dive in! 1:30pm 	**4** Fossil Focus 11:30am Fossil Focus 1:30pm	**5** Story Time 10:30am Hot & Wild California 11:30am Hot & Wild California 1:30pm
11:30am n 1:30pm	**10** Story Time 10:30am Creature Feature 11:30am Wildlife Sketching 12:30pm Dive in! 1:30pm	**11** Fossil Focus 11:30am Fossil Focus 1:30pm  **SNAKE FEEDINGS** Every Friday 2pm	**12** Story Time 10:30am Fossil Focus 11:30am Fossil Focus 1:30pm
11:30am n 1:30pm	**17** Creature Feature 11:30am Wildlife Sketching 12:30pm Dive in! 1:30pm 3rd Thursday 5:00pm 3rd THURSDAYS CLOWNFISH, CORALS & COCKTAILS CONVERGE	**18** Fossil Focus 11:30am Fossil Focus 1:30pm	**19** Story Time 10:30am Fossil Focus 11:30am Fossil Focus 1:30pm
11:30am n 1:30pm	**24** Story Time 10:30am Creature Feature 11:30am Wildlife Sketching 12:30pm Dive in! 1:30pm 	**25** Fossil Focus 11:30am Fossil Focus 1:30pm	**26** Story Time 10:30am Wildlife Sketching 11:30am Wildlife Sketching 1:30pm
11:30am n 1:30pm	**31** Creature Feature 11:30am Wildlife Sketching 12:30pm Dive in! 1:30pm	 DINOSAURS ANCIENT FOSSILS, NEW DISCOVERIES September 16, 2006–February 4, 2007	

June 11 ○

Full Moon, also called the Rose Moon, Flower Moon, or Strawberry Moon by early American settlers. While Summer's Sun arcs high across the sky, watch how low Summer's Full Moon crosses the heavens.

June 21

Summer Solstice for the Northern Hemisphere. Summer officially begins at 5:30 am PDT, and the Sun rises and sets at its most northerly points on the horizon, making its longest and highest arc across the sky. In the Southern Hemisphere, the seasons are reversed, and this day marks the start of winter.

June 25 ●

New Moon. Sighting of the youngest visible crescent at sunset tomorrow marks the start of the month Jumada-at-Thani in the lunar-based Islamic calendar.

July 10 ○

Full Moon, known to the Algonquin as the Buck Moon or the Thunder Moon, to the Haida as the Killer Whale Moon, and to the Pima as the Moon of the Giant Cactus. Located just behind the "teapot" asterism of Sagittarius.

July 24 ●

New Moon. The first, young crescent will be visible after sunset on the evening of the 25th, marking the start of the month of Rajab in the Islamic calendar.

August 7

Summer Solstice in the Northern Hemisphere...on Mars!

August 9 ○

Full Moon in Aquarius. Also called the Moon When the Cherries Turn Black by the Lakota Sioux, the Mulberries Moon by the Natchez, and the Blueberry Moon by the Ojibway.

August 12 ☄

Peak of the annual ***Perseid meteor shower,*** averaging about 50 meteors per hour. Usually a fine show, but the brightness of a waning gibbous Moon will obscure the view.

August 23 ●

New Moon. Sighting of the thin, young crescent just after sunset tomorrow marks the start of Sha'ban in the Islamic calendar.

See programs on page 5
for information on
STARGAZING AT THE SF
BOTANICAL GARDENS

RETURN TO THE MOON?

On July 20, 1969, *Apollo 11* astronauts Neil Armstrong and Edwin Aldrin landed their Lunar Module "Eagle" on the dusty plain known as the Sea of Tranquility and became the first humans to walk on the surface of the Moon. Ten other astronauts followed them, exploring five other sites on the lunar surface, conducting scientific experiments, photographing the landscape, and collecting more than 800 pounds of lunar rocks and soil and returning them to Earth (one of those rocks – from the final manned mission in 1972 – is on public display at the Academy). Following President Bush's "Vision for Space Exploration," NASA plans to return astronauts to the Moon by 2015 and no later than 2020. One of the priorities being discussed is whether or not to land near the lunar poles, where the intriguing signature of water is believed to have been detected at the bottoms of deep craters, where direct sunlight never shines and where the water could be mixed with the soil as ice.

	SUNRISE	LOCAL NOON	SUNSET
JUNE 1	5:49 AM PDT	1:08 PM PDT	8:26 PM PDT
JULY 1	5:51 AM PDT	1:14 PM PDT	8:36 PM PDT
AUGUST 1	6:13 AM PDT	1:16 PM PDT	8:18 PM PDT

(Times are for San Francisco, CA, and will vary slightly for other locations.)

The Planets

Mercury

Making a brief appearance in the evening sky, the speediest planet is visible after sunset through mid-July, reaching greatest eastern elongation (greatest angular separation from the Sun) on June 20th. It's not visible again until early August, when it leaps out of the predawn twilight for an early-morning rendezvous with Venus on August 10th. Then, it quickly retreats back into the Sun's glow in late August. The Moon may help you locate Mercury when it passes nearby on the evening of June 26th and the morning of August 22nd (difficult, but a beautiful clustering with Venus & Saturn at the same time!).

Venus

A predawn sight, bright Venus dominates the morning sky as it gradually moves during the season from the stars of Taurus through those of Gemini and Cancer and into Leo. The Moon passes nearby on the mornings of June 22nd & 23rd, July 22nd, and August 21st & 22nd. On the morning of August 26th, Venus and Saturn make the second closest planetary configuration of the year and can be seen very low in the east shortly before sunrise.

Mars

Still prominent in the west just after sunset, Mars makes spectacular passes through the faint "Beehive" star cluster and very near the ringed planet Saturn in mid-June. Then, it slowly marches out of Cancer into Leo, while at the same time gradually dropping lower into the west from night to night. The Red Planet passes near the star Regulus (the heart of Leo) on July 22nd. Look for the Moon near Mars on June 28th, July 26th & 27th, and August 24th & 25th (difficult in the glow of the setting Sun).

Jupiter

The largest planet can be found in the southeast after sunset in June, slowly moving into the stars of Libra. As summer progresses, the rotation of the sky carries Jupiter from the southeast to the southwest. Long-time Jupiter-watchers may know that the planet has been in retrograde motion (moving westward against the stars) – this ends on July 6th, when it resumes its ponderous eastward motion. Look for the Moon nearby on the evenings of June 7th, July 4th & 5th, and August 1st & 29th.

Saturn

Saturn is low in the west in June and gradually dropping into the twilight. Don't miss its spectacular pairing with Mars from the 11th to the 20th. Saturn disappears from view in mid-July, with conjunction occurring on August 7th, when the ringed planet passes the Sun and enters the morning sky, where it's seen rising just before dawn. The Moon swings by on the evenings of June 27th (with Mercury and Mars clustered nearby) & July 25th (too close to the Sun to be seen), and on the morning of August 22nd (in the middle of a crowd with Venus and Mercury).

CULTIVATING CORALS

Aquarium Curator Bart Shepherd flew to Hawaii in March to collect over 400 pieces of coral from the Waikiki Aquarium, which he then "planted" in the new coral rearing pods.

In preparation for the opening of the new Academy, which will contain the world's deepest living coral reef display, Steinhart Aquarium biologists are beginning to grow hundreds of new colonies of coral. To find room for these new inhabitants at 875 Howard Street, Aquarium biologists and engineers have worked together to convert agricultural grape bins into carefully monitored tropical reef environments. A number of these bins, which the biologists have dubbed "Coral Rearing Pods," are now visible behind the glass walls of what used to be the Naturalist Center space on the second floor.

Although they look like underwater plants, corals are actually animals that are related to anemones and jellyfish. Because these animals are able to reproduce asexually, biologists can grow new corals by breaking off pieces of an existing coral colony and affixing them to new pieces of rock. Academy biologists use a variety of creative tools to encourage corals to attach themselves to new substrates, including superglue, rubber bands, toothpicks, epoxy putty, and fishing line. The Coral Rearing Pods at the Academy are currently "planted" with small pieces of coral that have been broken off from larger colonies. By 2008, they will have grown to fill an area of nearly 800 square feet.

STEINHART'S ROCKFISHES

The rockfish family, a large group of fishes that is found around the world, owes its common name to the Academy's first ichthyologist, William Ayres, M.D. A physician by trade, Ayres was also a fish aficionado. In 1854, he picked up three fishes from local fishermen, gave them their scientific names, and published his findings, using "rockfish" as a common name for the first time.

The rockfish family, Scorpaenidae, has been studied by a long line of Academy ichthyologists, including David Starr Jordan, who served as the President of both the Academy and of Stanford University in the late 1800s, and Academy Curator William Eschmeyer, who has spent the past 25 years compiling a complete guide of all of the known fishes (including rockfishes) on Earth. Over time and across seas, many species have been given multiple names or misidentified. Academy taxonomists and aquarium biologists have worked hard to standardize the early Portuguese, Italian, Chinese and Spanish rockfish identifications.

While many of the inconsistencies among the scientific names for rockfish have now been resolved, much confusion still exists about the common names of these species. On restaurant menus and in casual conversation, many species are lumped together under general common names, such as rockcod, bass, and snapper. However, at Steinhart Aquarium, visitors will find that each species is referred to by a unique, accepted common name. This practice helps to clarify the "catch statistics" used to monitor the health of various fisheries and set sustainable harvest limits for individual species.

Steinhart Aquarium biologists have had to learn quickly about rockfish behavior and biology in order to care for them properly. They have learned, for instance, that rockfish caught below 50 feet must have air bled from their buoyancy organs before they are brought to the surface in order to prevent pressurized air from entering their tissues. They have also learned a great deal about how rockfish interact with one another. Experience has shown that blue rockfish are happy to school together in open water, while tiger rockfish prefer a solitary existence among rocks. Additionally, under the wrong conditions, some fish can become food for their tankmates. The "bocaccio" (Italian for "large mouth") that the aquarium acquired as two-inch hatchlings in 1975 rapidly grew into six-pound cannibals. When biologists noticed that some of the fish in the tank were missing, they sent the bocaccio to a larger tank at Monterey Bay Aquarium.

Visitors to 875 Howard Street may notice tags trailing from the dorsal fins of Steinhart's rockfish. These fishes were part of a study by the California Department of Fish and Game. The research, which was supported by our local sport fishery, indicated that the inshore rockfish fishery is in peril. Larger fishing fleets, improved fishing techniques, and poor fisheries management have all contributed to the decline in local rockfish populations. Visit us on Howard Street to pick up a seafood guide that will help you decide which species are safe to eat and which to avoid.

Plant Preservation

To help save San Francisco's native plants, Academy botanist Tom Daniel is making a list and checking it twice.

Photo by Tom Daniel

Photo by Dong Lin

Academy Curator Tom Daniel

Sitting in his office on the sixth floor of the Academy's 875 Howard Street building, Academy botanist Tom Daniel thumbs through a well-worn copy of *A Flora of San Francisco*, co-authored in 1958 by one of his Academy predecessors, John Thomas Howell. The book, which is held together by copious amounts of tape and is filled with scribbled notes, used to be Howell's personal copy of the publication. Daniel is now drawing on those notes, along with hundreds of hours of recent field work, to create an updated guide to San Francisco's flora, which will feature new photographs and user-friendly identification keys for each of the roughly 1,100 species of native and naturalized exotic plants in San Francisco County.

A lot has changed since 1958, when much of San Francisco's Sunset District consisted of sand dunes and grasses. Many native species are literally losing ground, while a number of new invasive species have popped up around the city. However, Daniel has been surprised to find that many of the native plants that were rare in 1958 are still hanging on today. The native huckleberry, for instance, which is now found only on Mt. Davidson, is still producing juicy berries for local birds. And Raven's manzanita, which is only known from one plant in the Presidio, is still alive and well - thanks to careful monitoring by the Presidio Park Stewardship program.

Daniel has also identified five species collected by his collaborators at the Presidio Native Plant Nursery that had

This tiny flower, called timwort (Cicendia quadrangularis), had not been recorded from San Francisco in over 100 years until it was rediscovered several years ago in the Presidio.

not been documented in San Francisco since Academy curator Katherine Brandegee recorded them in the 1890s. Because they had not been seen in over 100 years, all of these species were assumed to be locally extinct. Some degree of doubt even existed as to whether or not they had ever existed in San Francisco, since Brandegee's specimens were destroyed during the 1906 earthquake and fire. The new findings support the original research conducted by Brandegee, who was the first female in the country to curate a botany collection, and lend increased credibility to the rest of her inventory of the county's flora.

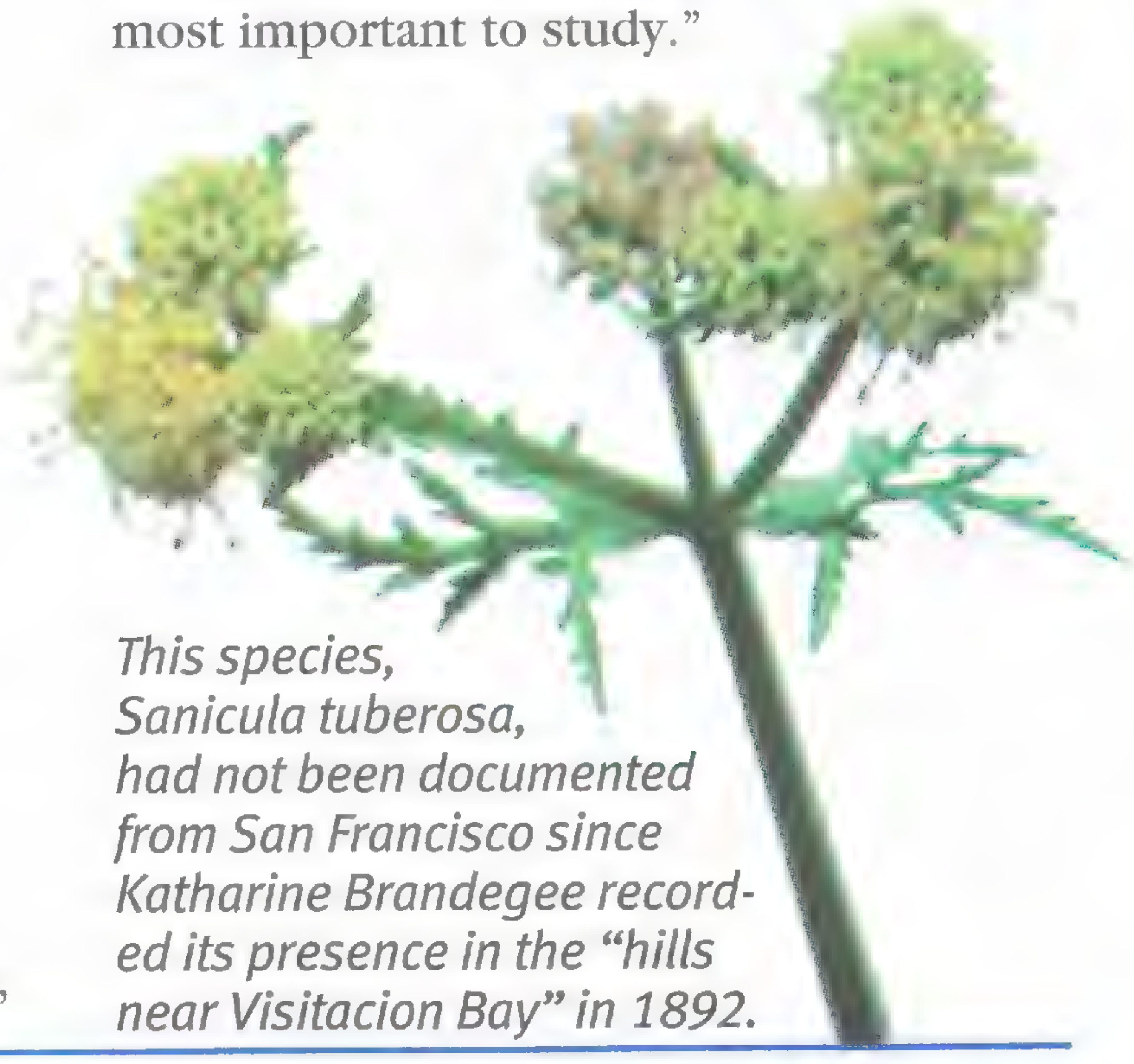
Pt. Reyes bird's-beak, Cordylanthus maritimus, is included in the California Native Plant Society's list of rare, threatened, or endangered species.

Daniel's new field guide to the flora of San Francisco is due to be published within the next two years. When it comes out, it will be used not only by hobbyists hoping to identify local plants, but also by conservation organizations working to preserve the city's native flora. The guide will include data about plants that have disappeared from the city over time, indicate where they occurred, and discuss their habitat preferences. This information will enable park managers to reintroduce locally-extinct native plants to the public lands where they once grew. Additionally, Daniel's guide will help land managers identify invasive species that are spreading especially quickly. One such offender, a grass named *Ehrharta erecta*, was not present at all when Howell published his 1958 guide. Today, it is the most common plant in the city.

The Presidio clarkia (Clarkia franciscana) is listed as an endangered species. It currently exists only in San Francisco and Alameda Counties.

> **Comprising only about 47 square miles of land, San Francisco is by far the smallest county in California. It is also the most densely populated. Despite these statistics, the county is home to a rich diversity of plants, including at least 21 rare, threatened, or endangered species.**

"An urban landscape may seem like a surprising place to conduct botanical research," says Daniel, "but many cities support rare, threatened, or endangered species in their parklands and open-space preserves. Precisely because these habitats have undergone such drastic change, they are among the most important to study."



This species, Sanicula tuberosa, had not been documented from San Francisco since Katharine Brandegee recorded its presence in the "hills near Visitacion Bay" in 1892.

In August of 2002, an arrowhead species (Sagittaria montevidensis) that had never before been documented in San Francisco emerged in three different places from sandy soil along the northeastern shore of Mountain Lake in the Presidio. The site had been covered by an old water tank for decades, but the tank had recently been removed. It appears likely that seeds of this species had been present in the seed bank beneath the tank all along and sprang to life only after the tank was removed. Several other native species that are infrequent in the county, such as slender rush, also appeared spontaneously at this same restoration site.

All photos this page by: Tom Daniel.

CAREERS IN SCI

An Innovative Academy Progra

After studying leaf-cutter ants with Academy biologists, intern Monica Velarde received a full scholarship to present her findings at the annual meeting of the Society for the Advancement of Chicanos and Native Americans in the Sciences.

In 2000, intern Flor Vargas (left) traveled with Academy entomologists to Madagascar to study beetle distributions as indicators of habitat change. She went on to receive a BA in Biology.

Alondra Blandon (left), who now manages the Academy's Naturalist Center, first began working for the Academy in 1997 as a Careers in Science intern. In the future, she hopes to earn a masters degree in Environmental Science Education.

Every day at the Academy, visitors of all ages move eagerly across the museum floor, expanding their view of the natural world. A cadre of Academy educators is on hand daily to help focus that view and foster the curiosity that the Academy inspires in all its visitors. Armed with a microscope, a video camera, and a computer screen, Jenny is one of those educators. After months of training and testing, she is poised and ready to answer almost any question from museum visitors. On any given day, she will draw upon her expertise and enthusiasm to try to convince you that an amoeba is incredible, even cool. And at 16 years old, she probably will.

Jenny is one of the 40 students currently participating in the Careers in Science Intern Program, a staple Academy science education program that celebrates its 10th anniversary this year. Careers in Science is a year-round program that gives 35-45 high school and early college-aged students singular opportunities to teach on the museum floor, learn alongside Academy scientists, and participate in real research projects in an authentic, paid working environment.

Conceived of and first implemented by former Academy staff member Kellyx Nelson in 1996, Careers in Science today remains true to its founding principles: utilizing the Academy's diverse institutional resources to provide unparalleled science training and career exploration opportunities to students, especially those from communities traditionally underrepresented in the sciences. An intern might teach about similarities in mammalian bone structure, attend a class on the geologic principles of plate tectonics delivered by an Academy scientist, meet a graduate student studying life in the deep sea, and receive help with his or her college application essay—all in a single afternoon.

Becoming a Careers in Science intern is not easy. With over two-thirds of interns remaining in the program for two years or more, a limited number of coveted intern positions are available each year, and the application process has become highly competitive over the last ten years. Last year, 144 students applied for only 8 intern positions. A unique aspect of the program is its mentorship structure, which begins the moment prospective students apply. Supervised by program staff, current interns conduct all face-to-face interviews and lead a final group interview with the pool of finalists, using teamwork and problem-solving activities to gauge leadership styles and measure enthusiasm. By giving current interns an investment in the selection process, the program creates a peer-reinforced cycle of committed young people. New interns are then paired with more experienced interns, fostering leadership skills and a sense of community.

Once selected, interns have access to the myriad opportunities that stem from the Academy's true strength: its unique synergy of collections, resources and staff from eight active research departments, as well as the Aquarium and Planetarium, and the Exhibits, Education and Public Programs departments. Interns work 4-15 hours per week during the school year and up to 35 hours per week in the summer, attending classes on core

Four interns learn about coral reefs and test a potential public floor activity.

Interns and Ashley (far right) on a tour of California colleges, where they met UCLA Ph.D. student Ben Wang (third from right), a former mentor for the intern program.

ENCE

n Celebrates its Ten Year Anniversary

science concepts, being tested before qualifying to teach on the public floor, learning animal husbandry skills with biologists from Steinhart Aquarium, and taking trips throughout California to learn field sampling and observation techniques.

"The intern community is diverse and unique," says Ashley Conrad-Saydah, who has been the Careers in Science program manager for over four years. "Every intern in the program is part of a group unlike any other in his or her life. The community is giving, accepting, and challenging all at once—interns encounter new perspectives, ideas and knowledge daily, allowing them to step outside of their comfort zones in an emotionally and physically safe environment."

Careers in Science serves as a model for nurturing the next generation of scientists and science educators at a time when our nation faces serious challenges about our future competitiveness in science and technology. In California, only 4% of students in grades 9-11 scored above the basic level on Integrated Science standardized tests in 2005. During her tenure, Ashley has demonstrated how the program can go beyond pure science instruction by providing stable rungs on a young student's career ladder. By adding SAT test tutoring, college application and resume training, and scholarship information resources for interns, she has created an unwritten program expectation: all interns apply to college. And they do. A recent longitudinal study of Careers in Science alumni found that 52% of respondents listed participation in the program as the primary reason they decided to continue their education.

With just under 120 interns having passed through the program in the ten years since its inception, Careers in Science concentrates on investing significantly in individuals and providing in-depth, formative experiences that are literally life-changing. One intern remarked, "It's not just about science. To me, it's really about achieving personal growth at a critical time in life. Life happens in stages and I think an experience like the one in the intern program is one of the times where someone can actively see themselves change for the better."

Not all interns go on to pursue science careers, but many do, and all interns glean powerful life skills from working with adults and other interns from diverse backgrounds. "A Careers in Science intern can find, follow and cultivate his or her passion through dynamic, fun interactions with peers, mentors, and luminaries in the scientific community," Ashley says, "so the program's potential impact on a student's life is enormous."

As the Academy heralds the opening of its new landmark building in 2008, the Careers in Science interns will be there, learning, teaching, and serving as tangible examples of the Academy's dedication to the future of science and the people who will forge new pathways. But Academy members don't have to wait until 2008 to see them in action—they are hard at work at Howard Street right now. During your next visit to the Academy, don't forget to look for the many young interns that are helping the Academy explore and explain the natural world. Jenny and her amoeba are waiting.

Alex Torres explains microscopic life to visitors with the help of a video microscope. Interns taught over 11,400 hours on the public floor last year.

Krystle Danridge shows an ochre sea star to a young visitor at the Academy's Discovery Tide Pool.

10 Years of Support

As Careers in Science celebrates its tenth anniversary, the Academy would like to thank those funders who have enabled it to reach this important milestone. Koret Foundation Funds provided pivotal support for Careers in Science every year since its inception. Consistent support from Koret Foundation Funds and additional lead funders such as the Ayrshire Foundation, the San Francisco Department of Children, Youth and Their Families, the Miranda Lux Foundation, and the S.D. Bechtel, Jr. Foundation have formed the financial foundation for Careers in Science's success.

KORET
FOUNDATION FUNDS

AYRSHIRE

DEPARTMENT OF CHILDREN,
DCYF
YOUTH AND THEIR FAMILIES

Miranda Lux Foundation

S.D. Bechtel, Jr. Foundation

the James Irvine foundation

WELLS FARGO

Gap Inc.

AEGON Transamerica Foundation
Bank of America Foundation
Bayer Foundation
Cisco Systems Foundation
Giannini Family Foundation
Global Education Partnership
The MacDonnell Foundation
Robert I. MacDonnell
William G. McGowan Charitable Fund, Inc.
The San Francisco Foundation
San Francisco Public Utilities Commission
Vodafone-US Foundation

ACADEMY LECTURES

Location: Sequoia Boardroom, California Academy of Sciences
Tickets: Free for Academy members, $8 non-members.
Tickets can be purchased by calling (415) 321-8000 or at the door, when available.

Galapagos – *The Next 100 Years*

Graham Watkins, Ph.D.
Tuesday, June 20 2 pm & 7:30 pm

On the centennial anniversary of the Academy's 1906 Expedition to Galapagos, Dr. Watkins, Executive Director of the Charles Darwin Foundation, compares the role of science as it was understood at the time of the historic Academy expedition with its role today. He reviews the complexity of conservation in the Galapagos Archipelago today and discusses ways in which the CDF is developing a more holistic vision of sustainable development, which could serve as a model for conservation in other remote and fragile ecosystems around the world.

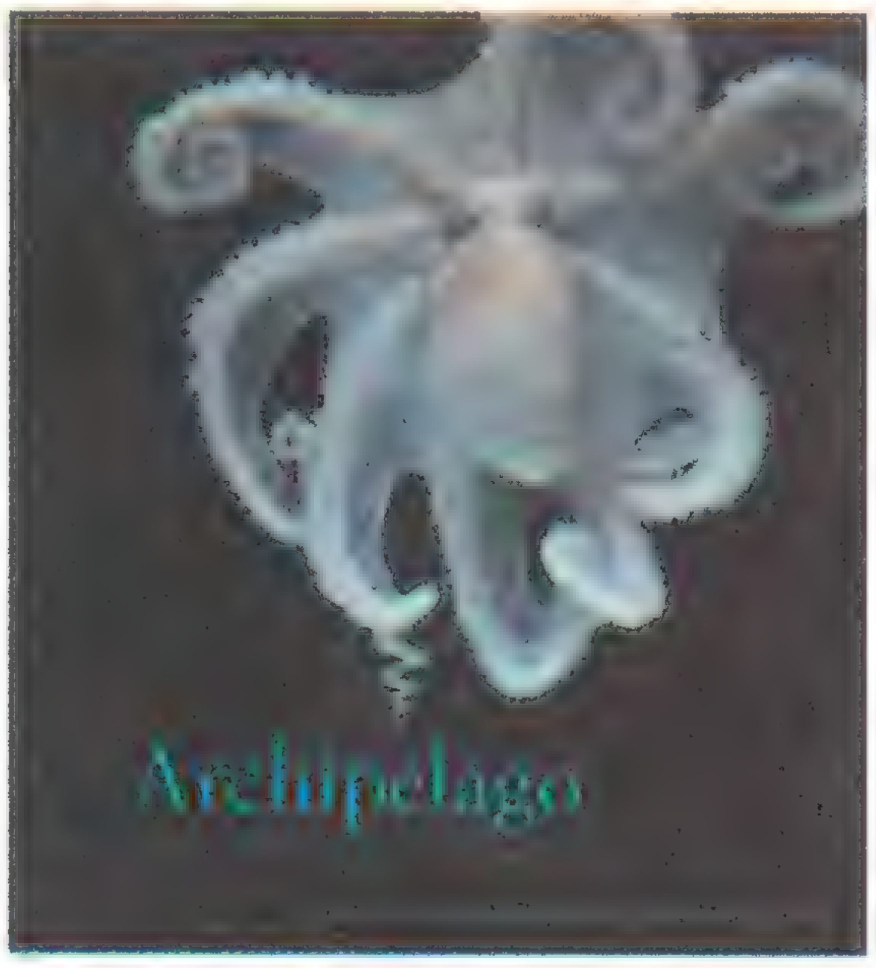
Steinhart Aquarium – *The Next 2 Years*

Chris Andrews, Ph.D.
Tuesday, July 18 2 pm & 7:30 pm

Steinhart Aquarium Director Chris Andrews is leading the efforts to prepare the aquarium for its return to Golden Gate Park in 2008. Join Andrews as he describes some of the challenges associated with the project, including the process of culturing corals in specially designed "coral rearing pods," located in both the basement and the second floor of the Howard Street facility. Free-flying butterflies and birds in the new rainforest exhibit will present another great challenge. During this riveting presentation, learn why Andrews likens the process of preparing for the new aquarium to aligning a three-dimensional jigsaw puzzle.

Archipelago: *Portraits of Life in the World's Most Remote Island Sanctuary*

Susan Middleton
Tuesday, August 15 2 pm & 7:30 pm



Groundbreaking fine-art photographers and award-winning environmentalists David Liittschwager and Susan Middleton joined forces to showcase a breathtaking selection of native flora and fauna of the remote Northwestern Hawaiian Islands in their new book, *Archipelago*. Home to nearly 70 percent of our nation's coral reefs, the Northwestern Hawaiian Islands host a remarkable ecosystem that supports a vast array of interdependent plants and animals, many of which are not found anywhere else on Earth. Join Middleton as she shares her experiences and her stunning photographs of the tremendous marine and terrestrial diversity found on these islands. Book signing to follow lecture.

SPECIAL LECTURE

at the Jewish Community Center of San Francisco
In Collaboration with the Leakey Foundation

The Leakey Foundation

Language, Reality and Speciation

Dr. Sue Savage-Rumbaugh
Tuesday, June 27th, 8:00 pm

Dr. Savage-Rumbaugh, lead-researcher at the Great Ape Trust of Iowa, explores new degrees of cultural competencies in apes. These competencies include language, stone tool manufacturing, use of materials for warmth, and language-based ways of parsing reality. Might apes possess a rich socio-cognitive culture that has been overlooked to date?

Cultural realities can exert extreme power over group behavior. If they are extant in apes, our previous explanations of our own speciation and the emergence of uniquely human abilities may be insufficient.

Tickets: $8 Members / $10 general admission / $6 Students
Call: 415-321-8000
For more information: www.leakeyfoundation.org

DEAN LECTURE

The First Stars in the Universe

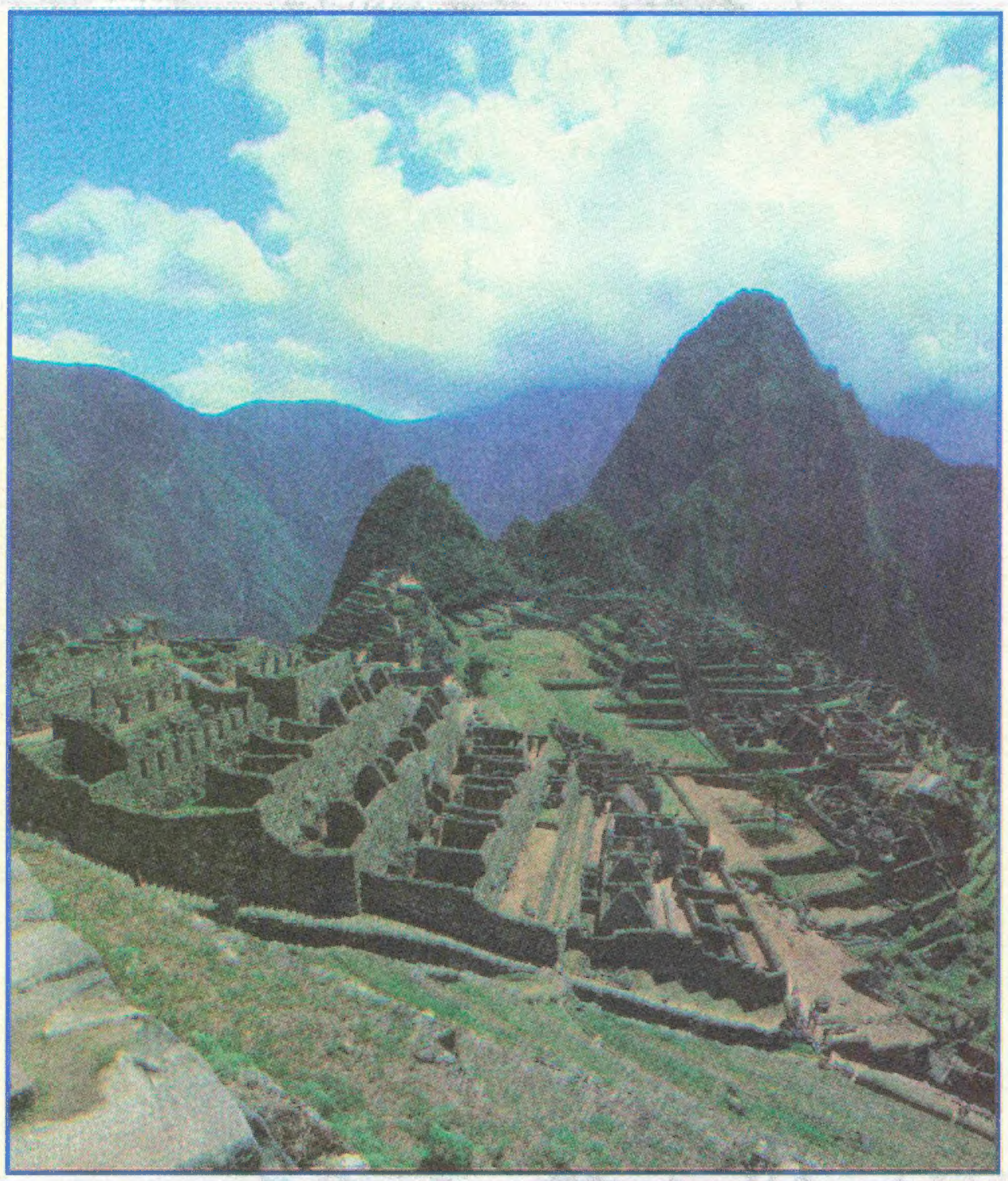
Dr. Aparna Venkatesan,
University of Colorado
Monday, June 19 at 7:30 pm

Modern cosmological observations imply that the first stars in the Universe were unique objects that strongly influenced their environment, despite their brief existence. This talk will present the current data and theoretical ideas about these stars, and discuss how future telescopes will be able to detect them.

Location: Kanbar Hall at the Jewish Community Center of San Francisco, 3200 California Street.
Tickets are $4 at the door or by mail.

PERU: ANCIENT MYSTERIES, NATURAL WONDERS

August 8–21, 2006
Leader: Douglas Long

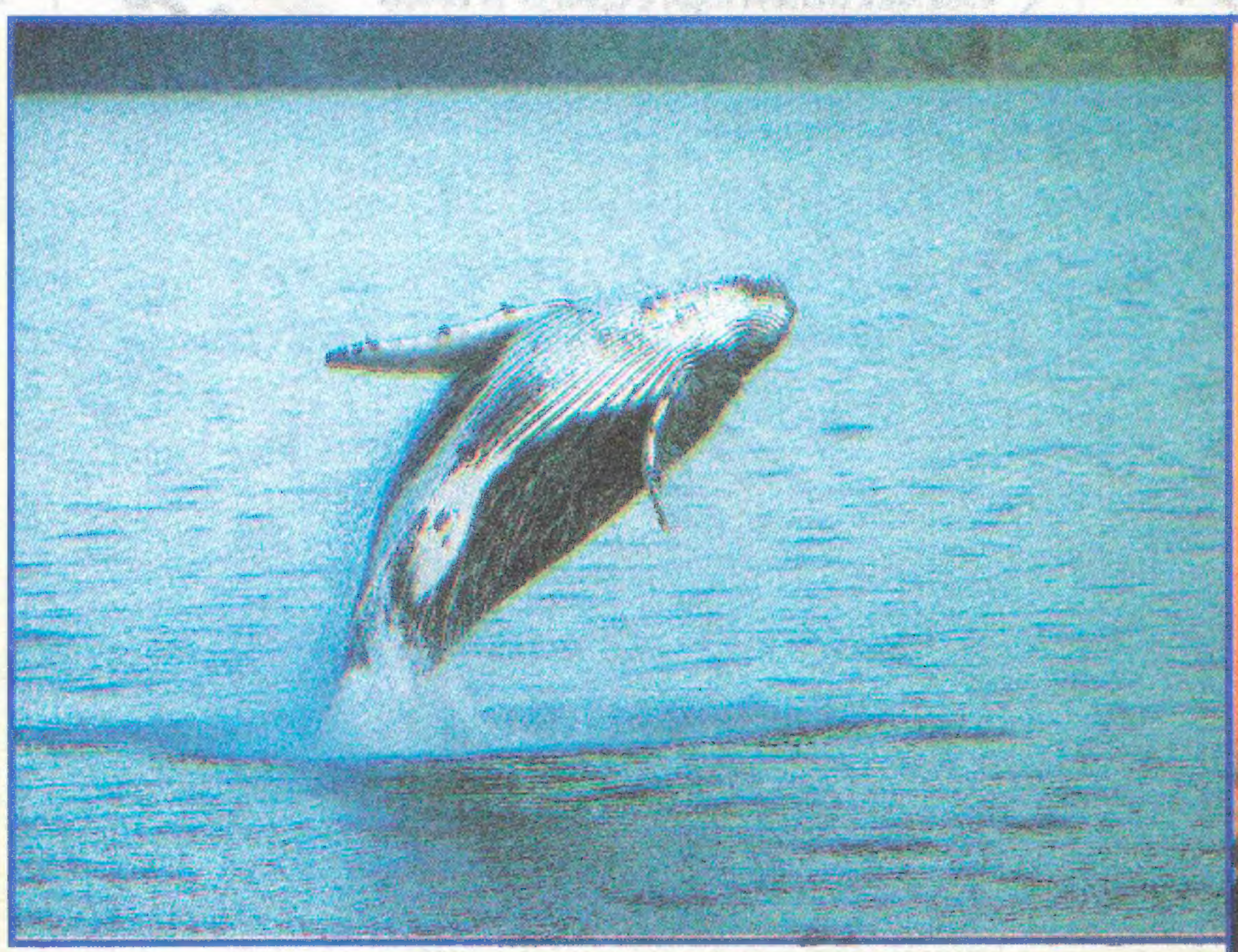


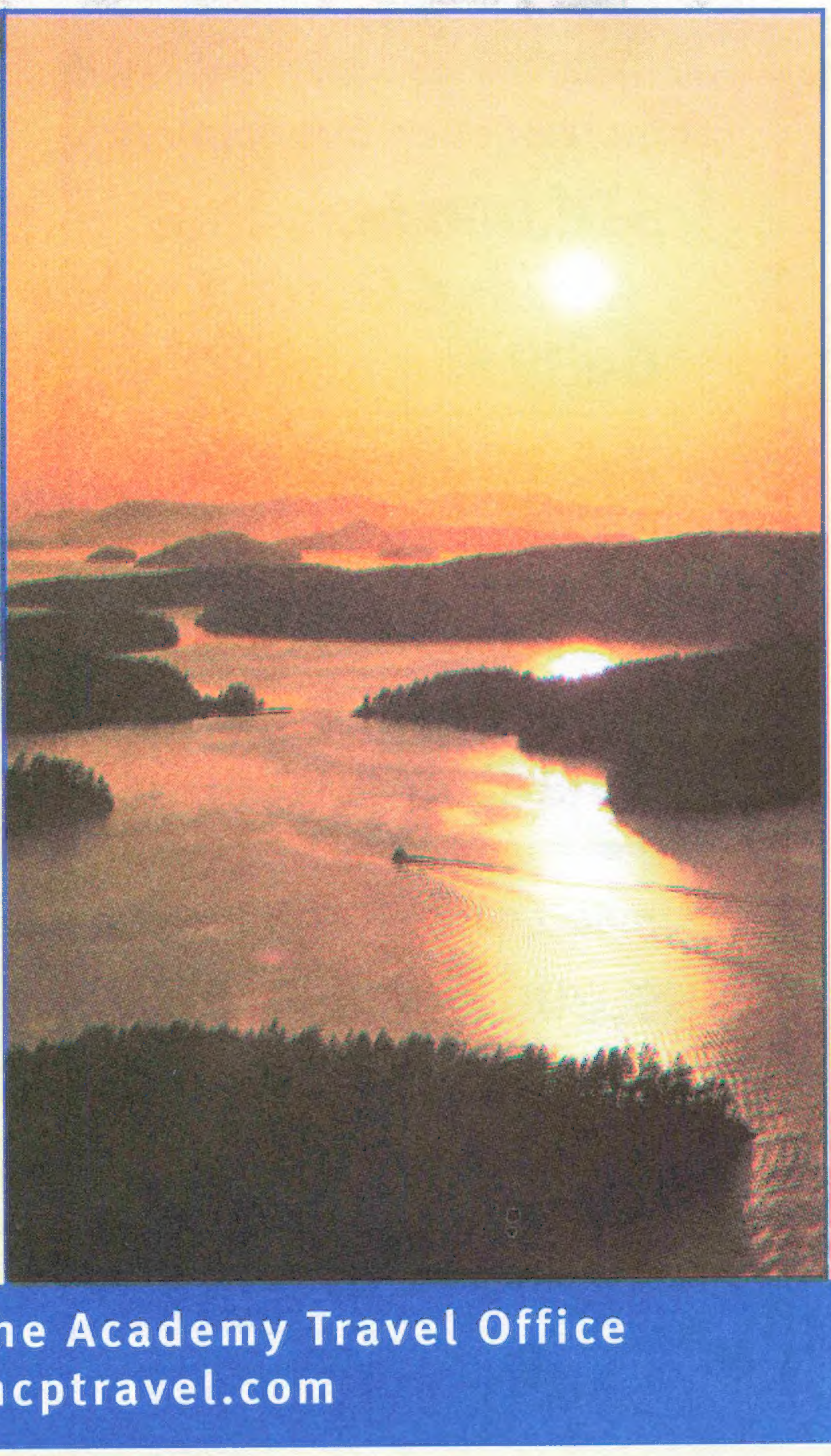
Few countries in the world offer the wide range of cultures, landscapes, and ecosystems found in Peru. Magnificent archaeological ruins, striking colonial architecture, strongly held native traditions—not to mention dramatic geography—make for a truly exceptional travel experience. Observe wildlife at the remarkable Ballestas Islands, home to one of the world's largest sea lion colonies and to more than 150 species of marine birds. At Machu Picchu, hike amid altars, temples, and terraced gardens and enjoy stunning views from the site's lofty mountain perch. Fly over the enigmatic Nazca Lines, examine the unbelievable masonry around the Sanctuary of the Sun, and explore Ollantaytambo, a 16th-century town featuring an intact Inca irrigation system. An optional pre-trip extension offers a tour of the pyramid complex at Sipan, as well as visit Chan Chan, the largest pre-Columbian city in the Americas.

Price: From $5,995 per person based on double occupancy, plus airfare

ISLANDS & WILDLIFE OF THE PACIFIC NORTHWEST

Aboard the *Sea Lion*
September 13–19, 2006
Leader: Juan Carlos Solis





Steeped in Indian traditions, traversed by great adventurers, and boldly painted by Kwakwaka'wakw and Kwagiulth artisans, the Pacific Northwest is deeply connected to the water which surrounds it. Survey the region's vast and rugged beauty, traveling to modern cities as well as historic villages rich in Indian heritage. Sail through waters rich in wildlife such as salmon, seals, and whales. Observe pods of orcas in the San Juan Islands and Johnstone Strait, and navigate the entire length of Princess Louisa Inlet, one of North America's most beautiful fjords. Kayak in the peaceful, cool waters of British Columbia. Enjoy the charm of Victoria & Butchart Gardens. Soak in Northwest Native American culture, from exquisite totems to the mask art at Alert Bay.

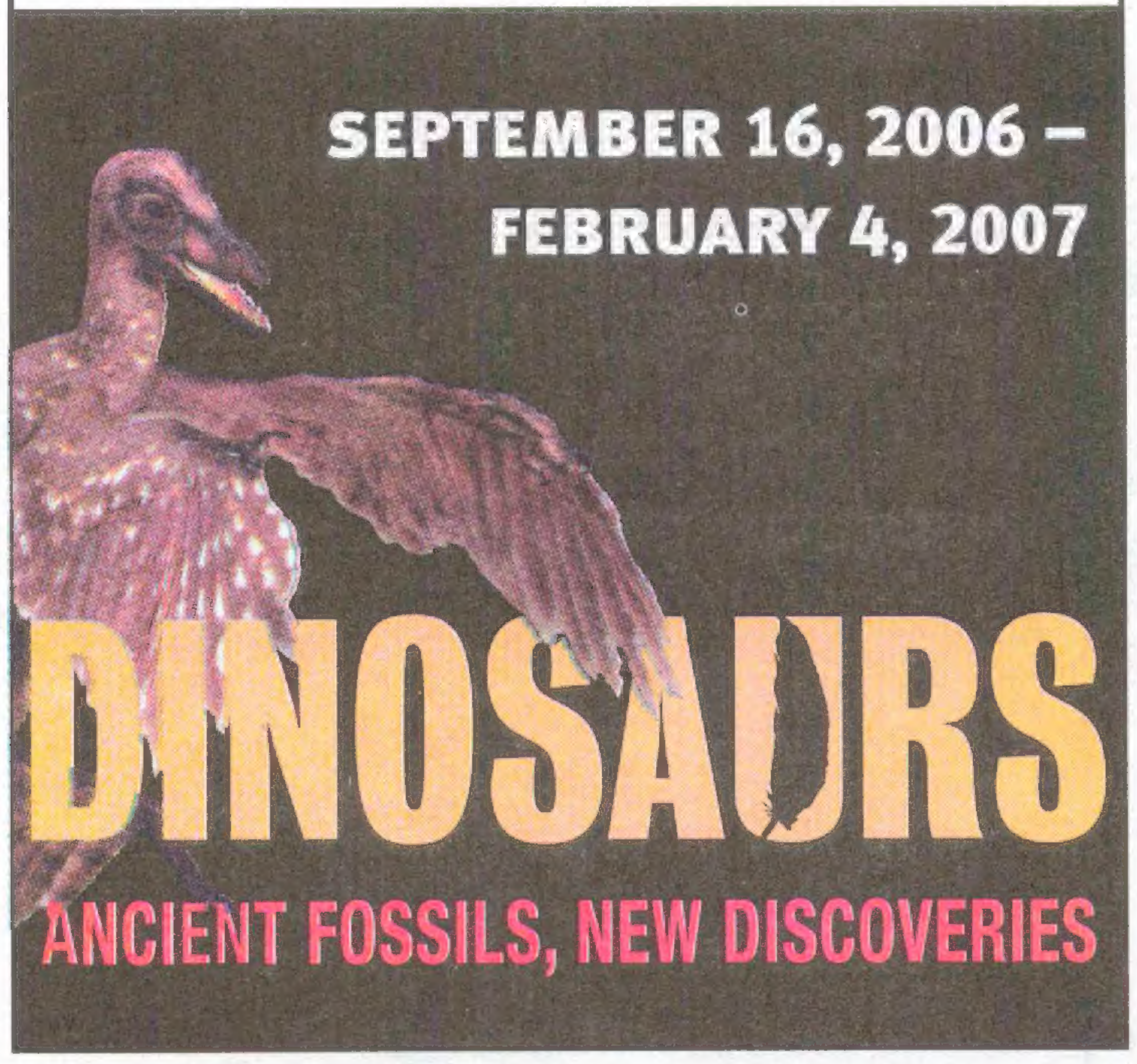
Price: From $2,940 per person based on double occupancy, plus airfare

For brochures or further information, please contact the Academy Travel Office at (800) 853-9372 or e-mail calacademy@hcptravel.com

The Academy thanks

The Safeway Foundation

for their sponsorship of our upcoming exhibit:



The Academy thanks the following foundations and corporations for their recent generous contributions:

For general operating support:

$10,000 from the Ann and Gordon Getty Foundation

$5,000 from the Columbia Foundation

$5,000 from the Thelma Doelger Charitable Trust

To support education programs:

$50,000 in a matching challenge grant from The Ayrshire Foundation for the Careers in Science Program

Friends of the Academy

January – February 2006

The Academy gratefully acknowledges the following supporters for their recent gifts of $1,000 and above to the Academy's Annual Fund.

Frank and Denise Balma; Corrina and Chris Bonomo; John and Barbara Boyle; Josephine Brownback; Mr. and Mrs. Richard F. Cahill; Mr. Edwin C. Callan; Dr. Elaine Daniels; Mr. David L. Davies and Mr. John D. Weeden; Pilar and Lew Davies; Lee Duran and Kazumi Duran; Betsy and Roy Eisenhardt; Mr. and Mrs. F.T. Elliott, Jr.; Mr. and Mrs. Richard P. Emerson; Marion and Jack Euphrat; Conception S. and Irwin Federman; Mr. and Mrs. T. Jack Foster, Jr.; Nancy and Steve Fox; Mark and Louise Gaumond; Ingrid Gillette; David Hearth and Lauren Hall; Mr. Don H. Holcomb; Mr. and Mrs. Andrew Holden; Donald and Jacqueline Jacobberger; Mrs. Katharine H. Johnson; Ms. Debby Kramer and Dr. Tom Kenny; Dr. and Mrs. Shiu Y. Kwok; Dr. and Mrs. Michael D. Lagios; Dr. and Mrs. Roger A. Lang; Mr. and Mrs. Gary Lauder; Lerdal Family; Mrs. and Mr. Sandra L. Linder; Lois B. Lippincott; Mr. Thomas N. Lippman; Mr. E.W. Littlefield and Ms. Julia Derby; Rose Martin; Kathryn K. McNeil; Mr. and Mrs. John A. McQuown; Tina and Hamid Moghadam; The Margaret G. Molarsky Charitable Fund; Dr. and Mrs. David Morrison; Mr. Timothy M. Muller; Naomi Nakashima, M.D.; Diane Ososke; Peter and Rozell Overmire; Alan and Virginia Pabst; Dr. and Mrs. Peter Raven; Mr. Craig A. Resnick and Mrs. Lisbeth L. Pratt; Mrs. Edward W. Rosston; Renee Rubin; Richard Shrieve and Yvonne Don; Hilary Bates and Jerome Simon; Dr. James Hart and Mary Pfeiffer Smith; Mr. Earl Rick Stokes and Mr. Ross H. Moore; Kat Taylor and Tom Steyer; Dr. and Mrs. Christian von Doepp; Mr. Paul Stricklin and Ms. Lisa Weston; Mr. and Mrs. Michael W. Wilsey; Mr. and Mrs. James Wintersteen; Mr. Paul Pao S. Yeh and Ms. Miao Yeng H. Yeh.

New Donor Circle Members

September 2005 to February 2006: $125 to $999

Many thanks to the following new donors and those who have recently increased their support of the Academy.

Mr. and Mrs. Marcus Aaron; Mr. Joseph K. Beaupre and Mr. Danny Rios; Ms. Doris G. Bebb; Mr. Bob Bennett and Ms. Elizabeth Shih; Ms. Sharman Bonus and Mr. Richard Manterer; Dr. and Mrs. Frederic W. Bost; Mrs. William H.V. Brooke; Mr. and Mrs. Dave Buoncristiani; Ms. Lynne A. Carmichael; Ms. Annette Carnegie and Ms. Christiane Nichols; Mr. and Mrs. Richard G. Carson; Mr. and Mrs. David K. Ching; Mr. and Mrs. Mel Clark; Mr. Raymond G. Connors; Ms. Fauno L. Cordes; Mr. and Mrs. John P. Dabney; Dr. and Mrs. John V. Dervin; Dr. and Mrs. Albert Edgerton; Ms. Martha Ehrenfeld and Ms. Emily Ehrenfeld; Mr. Greg Endom; Mr. and Mrs. Peter Engstrom; Mrs. Helene Ettelson; Mr. Peter Fairbanks and Ms. Elizabeth T. Peters; Ms. Elyn Fazio; Mr. Daniel Fernandez; Mrs. Dorothy Filice and Ms. Julie Filice; Mr. Richard L. Finch; Mr. Dan Ford and Ms. Mary Holstege; Ms. Marian C. Gonzalez; Ms. Reggie Griner and Mr. Anthony Topolsky; Mr. and Mrs. George G. Hall; Mr. Remy Hathaway; Mr. Ephraim Heller and Ms. Karen Cosgrove Heller; Mr. and Mrs. Roger Ketcham; Mr. and Mrs. Thomas M. Lacey; Mr. Philip A. Lathrap; Mr. and Mrs. Andrew Licht; Mr. and Mrs. Al Lilleberg; Dr. Grace L. Lusk and Ms. Theresa Fitzgerald; Mr. and Mrs. Denny A. McLeod; Ms. Nancy L. Miles; Dr. and Mrs. Richard L. Miller; Ms. Cynthia Plevin; Ms. Deborah Robbins and Mr. Henry D. Navas; Mr. and Mrs. Mark D. Roos; Mr. Richard W. Ross; Mr. and Mrs. Phillip S. Scarborough, Jr.; Ms. Stella Sebastiani; Mr. Jacob Sigg; Ms. Janet M. Sinnicks; Mr. Clifford C. Skolnick; Mrs. Ann C. Steppan; Mr. and Mrs. David Steinberg; Mr. and Mrs. Richard Stier; The Honorable and Mrs. John A. Sutro, Jr.; Mr. Randy Taylor; Mr. and Mrs. Thomas Tegge; Mr. and Mrs. Chris Tescher.

Join the Academy Guild

Imagine all the possibilities for you and your family.

Join the Academy Guild and explore the natural world with your family! Members enjoy a full calendar of family-friendly events, including parties, behind-the-scenes tours, hikes, and exhibit openings. Membership begins at $250 and includes:

- **Our Halloween Party and Annual Guild Family Event**
- **Academy-led nature hikes, picnics, and other outdoor activities**
- **Behind-the-scenes lab tours with Academy scientists**
- **A scavenger hunt in Steinhart Aquarium**

For more information about joining the Academy Guild, please contact Jeanna Yoo, Major Gifts Officer, at (415) 321-8413 or jyoo@calacademy.org.

Margaret Jacobsen and Meg Bertero, Co-Chairs of the 2005 Guild Halloween Party, enjoying the event with their families.

Special Benefits for Friends

Share in the excitement of scientific discovery up close as an Academy Friend. To learn more about the new Academy and behind-the-scenes tours of our research labs, please contact Jeanna Yoo, Major Gifts Officer, at (415) 321-8413 or jyoo@calacademy.org.

Rajnikant and Helen Desai with Executive Director Patrick Kociolek at the Friends Celebration Reception.

LEARN FROM...

DISCOVERY

The Academy's newsletter of science and philanthropy

Discovery highlights news about financial and estate planning strategies. The current issue is a timely guide to life income plans. Other articles focus on Academy history and people. A new column, Academy Memories, will feature stories and images from members and volunteers.

If you have a memory to share with us or want be added to the *Discovery* mailing list, contact *Louise Gregory at 415-321-8407* or *lgregory@calacademy.org.*

Information on estate planning can be sent to you or obtained on our website at *www.calacademy.org.*

You may also return this coupon to Louise at 875 Howard Street, San Francisco, CA, 94103.

___ I have an Academy memory that I'd like to share with you.

___ Please add include me in future *Discovery* mailings.

___ Please send me information on:
  ___ Drafting or Reviewing Your Will
  ___ Tax Advantages of Giving Real Estate
  ___ Life Income Gifts
  ___ Gifts of Retirement Plans and Life Insurance
  ___ *I have included the Academy in my estate plans*

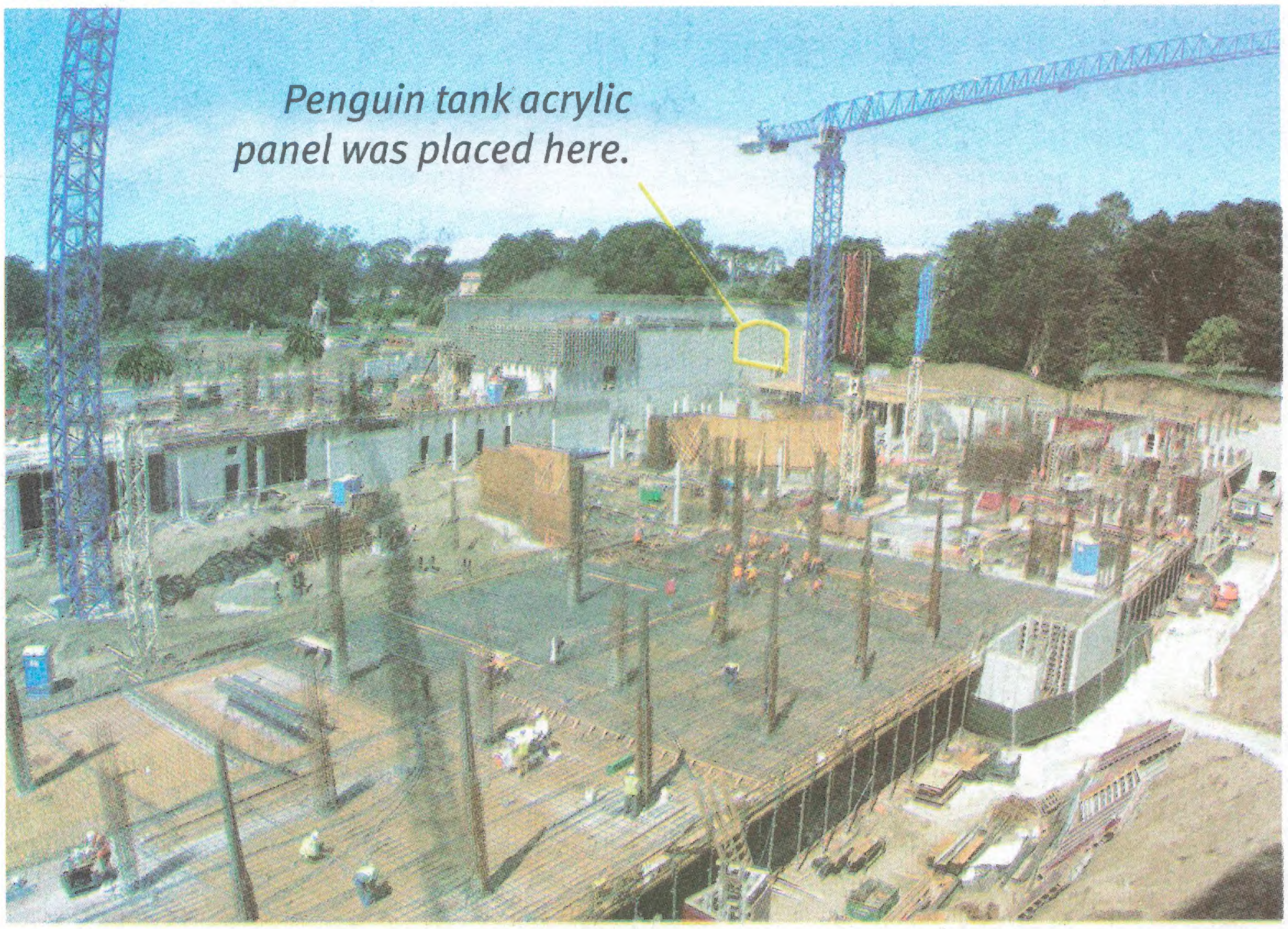
Name ______________________________

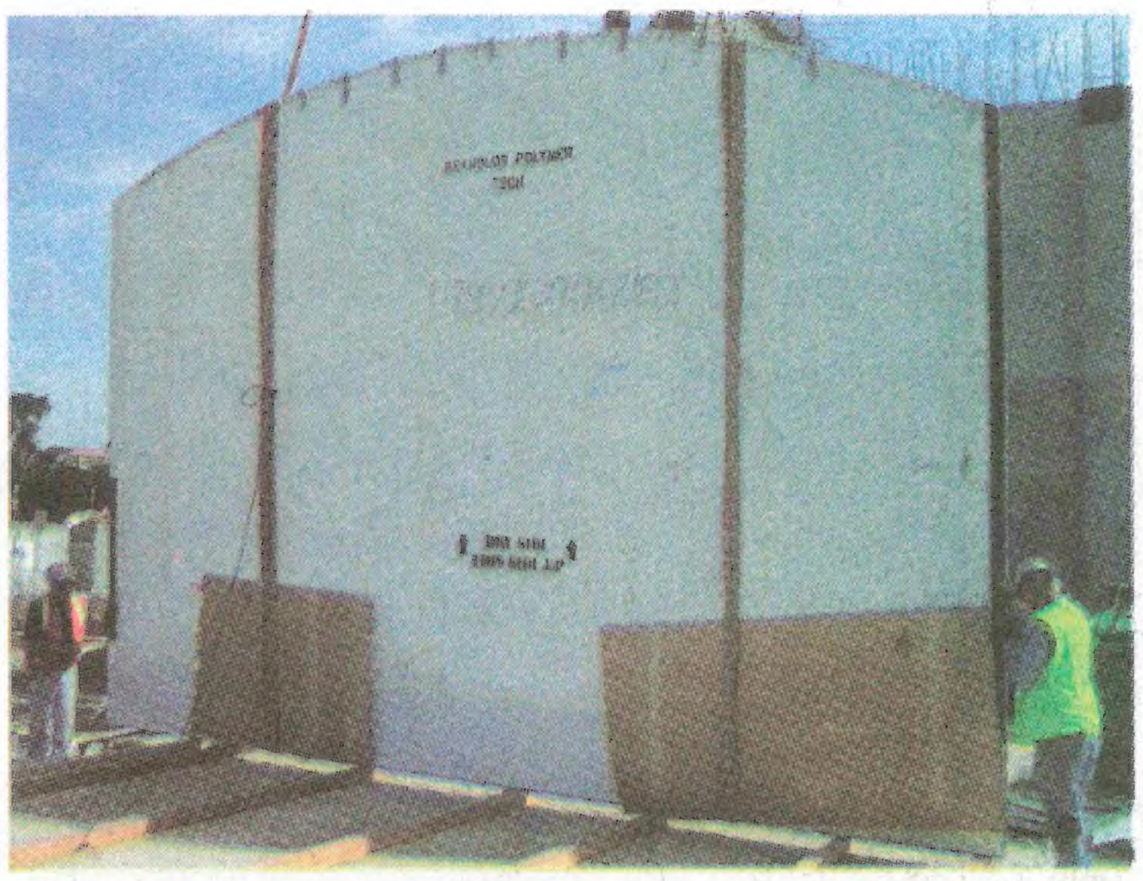
Address ______________________________

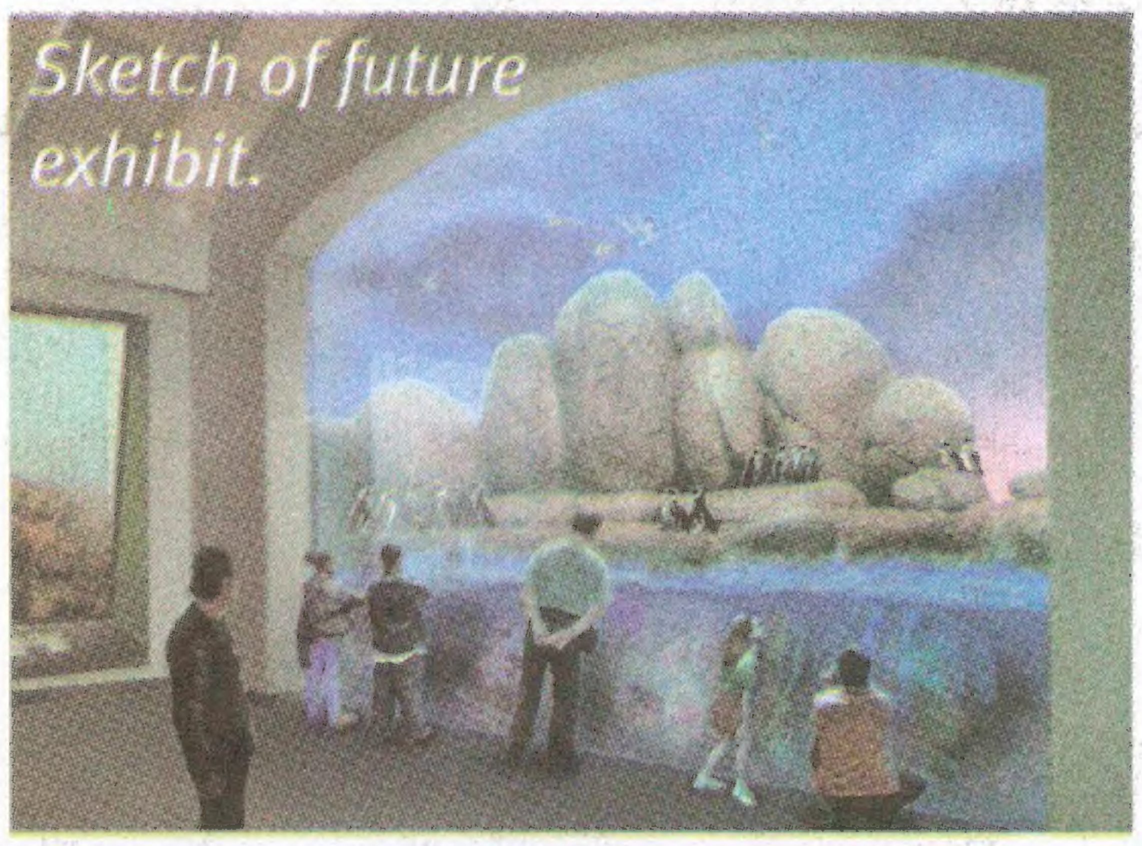
City, State Zip ______________________________

Telephone ______________________________

E-mail ______________________________


Penguin tank acrylic panel was placed here.




Sketch of future exhibit.

A number of milestones have been reached in the new Academy project over the past several months. The first piece of acrylic for an aquarium tank was installed in April when contractors moved the viewing panel for the new African penguin display into place. The water-tight seal of an aquarium tank was tested for the first time in May when that same tank was filled with water. The concrete walls for three of the largest aquarium displays—the Coral Reef tank, Amazon Flooded Forest tank, and Swamp tank—were poured. And the basement rooms that will hold many of the Academy's 18 million scientific specimens were completed.

In a few weeks, the Academy's project cranes will do some of their heaviest lifting when they move the viewing panels for the Coral Reef tank and the Flooded Forest tank into place. These panels weigh 31,000 pounds and 40,000 pounds, respectively, pushing the limits of what the project cranes can carry. Because the panels are so heavy, the cranes cannot use typical suction devices to carry them, so nylon slings will be used instead.

As construction continues on the new Academy building, an emphasis on environmental responsibility is guiding every decision. One example of this green focus can be found in the mountain of sand that was unearthed when contractors excavated the space for the new Academy basement. Some of this sand was eventually backfilled around the new structure, but the excess sand—a pile that weighed over 80,000 tons—was sent to some surprising new homes. About 20 percent of the pristine sand was used for restoration of dunes in and around Baker Beach, another 20 percent is scheduled to go to Land's End for a native replanting initiative, about 50 percent was sent to quarries for reuse in asphalt or direct sale, and 10 percent was used for general fill in local construction projects.

Sending sand to quarries may not sound very exciting at face value, but it represents a direct reuse of material. That sand was saved from a landfill fate, and its reuse prevented new material from being quarried from previously undisturbed soil. Using sand for general fill in construction sites may also sound unexciting, but the Academy's sand was used at sites less than two miles from the Park, thus conserving transportation fuel. The best reuse story, however, is certainly that of the sand that was sent to Baker Beach and Land's End. In both instances, native soil was used to restore a natural ecosystem, increasing the amount of habitat available to native California species.

Visible progress is now being made on the Academy's new building every day. To track the progress of the project, visit www.calacademy.org/newacademy. New photos of the building site will be added weekly.

CALIFORNIA
ACADEMY OF SCIENCES

875 Howard Street
San Francisco, CA 94103
Open Every Day
10am - 5pm
calacademy.org
415.321.8000